CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

POSITION AVAILABLE for engineer capable of writing, developing, and supervising correspondence course in air conditioning and refrigeration. Also openings available for teacher in day and evening sessions of various phases of air conditioning, refrigeration, and drafting. Write only, giving qualifications, etc. TECHNICIANS INSTITUTE, 244 W. 14th St., New York City.

POSITIONS WANTED

EXPORT: Engineer, 32, American, with technical and export experience in household and commercial refrigeration, market analyses, distributor selection, foreign merchandising, American buying. Widely traveled, fluent German, some French. Seeks connection with outstanding organization in America or Europe offering future. Will travel or reside abroad. Employed at present. Box 913, Air Conditioning and Refrigeration News.

COLLEGE TRAINED, experienced refrigeration engineer can help you work out your problems of design, development, production, and process. Experience in air conditioning, domestic and commercial refrigeration, electric ranges, hot water heaters, oil burners, beverage and water coolers, ice cream cabinets. Production problem specialist. Why not discuss that opening with me? Box 916, Air Conditioning and Refrigeration News.

EQUIPMENT WANTED

WANTED—General Electric and Westinghouse household units. State type, model, condition and price wanted. Box 915, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

MAJESTIC SURPLUSES. 1000 complete conventional and hermetic type units as is $15.00. New evaporators $4.00. New Majestic capacitor motors $4.50. New refrigerator shelves $5.00 hundred. New copper gas condensers $2.00. Electrolytic condensers 75¢. 2 hour test cabinets with air tifts and Bristol records $7.50. 3/16" tinned copper tubing 30¢ lb. Discounts on quantities. G & G COMPANY, 5801 Dickens, Chicago.

TWIN CYLINDER and single cylinder Methyl compressors, brand new. Ideal for domestic and small commercial installations. Also fans, pulleys, expansion valves, fittings, recording instruments, receiver valves, and condensers. Priced at fraction of cost. A few ⅛ H.P. A.C. single cylinder complete condensing units. Discontinuing our refrigeration department. Box 914, Air Conditioning and Refrigeration News.

TWO MAJESTIC units and two Servel units, in crates, good condition, all four for $30.00, f.o.b. Belleville, Illinois. WALTER L. RHEIN, Belleville, Illinois.

MAJESTIC — GENERAL ELECTRIC — SERVEL hermetic units repaired and exchanged. Majestic—$20.50—General Electric—$25.00—Servel—$18.50 F.O.B. our factory. One year unconditional guarantee. Every unit undergoes complete tests for temperature, cycling, wattage consumption and quietness on genuine test equipment. See our advertisement this issue under "Buyer's Guide". REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for prices and dealerships. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halectric can repair it. Service prompt, prices right, guarantee reliable. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

HERMETIC UNITS REPAIRED and exchanged—Majestic $18.50—Westinghouse $25.00—Gibson $18.50—General Electric $25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. ALLIED REFRIGERATION PRODUCTS CO., 1947 Flushing Ave., Brooklyn, N. Y.

SCHOOLS

ATTENTION, SERVICE MEN! Write for particulars concerning our extension course designed especially to give you a thorough knowledge of the technical part of refrigeration and air conditioning. For men with no refrigeration experience, we recommend our resident course. DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING, 4125 Grand River Ave., Detroit, Mich.

STUDY REFRIGERATION ENGINEERING. A new, personally supervised Home-Study course. Recently copyrighted. Lessons comprise text, illustrations, blueprints; all to make subjects and problems easily understood. Acquire a theoretical knowledge of refrigeration engineering. For details write FEDERAL INSTITUTE OF REFRIGERATION ENGINEERING, 712 N. Latrobe Ave., Chicago, Ill.

ARTIFICIAL FOOD DISPLAYS

MANUFACTURERS of artificial fruits, vegetables, meats. Over fifty pieces from which to select, including full size Turkey, Capon, Chicken, and Watermelon. Sets to accommodate every make of refrigerator. Reasonable prices ranging from $2.75 to $9.00 per set. Write for complete data. ROMAN ART CO., INC., 2704 Locust Blvd., St. Louis, Mo.

Kelvinator Appoints 10 Range Supervisors

DETROIT — Ten regional range supervisors have been appointed to the sales staff of the Nash-Kelvinator Corp., according to Pierre L. Miles, sales manager of the range and water-heater division.

New supervisors and their headquarters are: western region—Harry J. Moeller, Seattle; R. H. Jancke, Denver; C. N. Smith, San Francisco; eastern region—H. S. Stratton, Nutley, N. J.; E. C. Sherman, Sunnyside, L. I.; central region—Carl J. Theobald, Detroit; Fred A. Ramsdell, Glen Ellyn, Ill.; south central region—W. A. Wilson, Kansas City; south eastern region—George Eastman, Raleigh, N. C. and T. L. Craig, Birmingham, Ala.

In announcing the appointments, Mr. Miles estimated that 1937 range sales will show a gain of 53% over those for last year.

Frigidaire Chicago Apartment House Sales Up 500%

CHICAGO—Apartment house sales of Frigidaire Corp.'s local branch since the first of the year show an increase of 500% over those during the same period last year, according to George W. Fawcett, manager of the branch's apartment house sales division.

'Shoppers' to Check On Violations of Kansas City Code

(Concluded from Page 1, Column 3)

committee, to explain their actions as well as their future intentions regarding the code. If unwillingness to abide by the regulations is expressed by the dealer, a committee of dealers handling similar lines will be appointed to interview the distributor regarding the offending dealer's attitude.

No dealer will be permitted to violate the code because a competitor has violated it, but will be required to report any such violations to the code committee.

Sales practices regulated by the code include provisions that:

No trade-in allowance shall be be made for an ice box on electric refrigerator sales, and no dealer shall lead a purchaser to believe that any portion of a discount, given off the regular price of a previous model or repossessed refrigerator, is given as an allowance for an ice box.

No discounts shall be given to any purchaser for cash. No discounts shall be given to any group of purchasers, or to any individual purchasing for a group.

Every dealer has the right to decide the amount of discount given to his own employes, but shall not permit employes to make purchases for friends or relatives at a discount. Employes will be told not to discuss their personal discounts with outsiders.

Dealers are not to accept orders from salesmen employed by other dealers, and if offered such orders are expected to report the matter to the employer.

All refrigerators on dealers' floors are to be plainly marked, with year, model, and price indicated. Repossessed models may show former price and amount of reduction, but must show current price.

Dealers and salesmen are prohibited by the code from attempting to break down a sale or secure a contract from a customer who has definitely placed an order for an appliance. Dealers are also barred from permitting a salesman to share his commissions with a customer, or to make a down payment or portion thereof for a customer.

Majestic Takes Factory Space in Chicago

CHICAGO—Majestic Radio & Television Corp., which last year bought the trademark and other rights owned by the Grigsby-Grunow Co., has leased for five years from the Austin Co. a building at W. 50th and Rockwell Sts., for a term rental of $75,000.

The Majestic company, a subsidiary of the Davega Stores Corp., will move its manufacturing operations from Marion, Ind., to its new site here.

Besides radios, the company plans to manufacture a line of electric refrigerators, it is said.

Fackler & Jones Head Seattle Graybar Merchandising

SEATTLE—F. H. Fackler, commercial supervisor, and Lloyd Jones, engineer, have been placed in charge of appliance merchandising for Seattle and adjacent territory by Graybar Electric Co., Kelvinator distributor.

New Graybar dealers have been announced by F. T. Brien, manager of the Kelvinator department, as follows:

Refrigeration and laundry equipment: Rhodes department store and Poole Electric Co., Seattle, and Fisher's department store and B. A. Almvig music house, Tacoma. Laundry equipment: Kaufman-Leonard Co., Tacoma.

New Jersey Utility Reports Refrigerator Sales Up 50%

NEWARK — Electric refrigerator sales of Public Service Electric & Gas Co. during the first quarter of 1937 were 50% greater than those for the corresponding period of 1936, it is reported.

There are now more than 320,000 homes in the utility's territory, it is estimated, in which electric refrigerators have been installed.

Dooley Appliance Shop Is Redecorated, Enlarged

FON DU LAC, Wis.—Dooley Appliance Shop here has doubled its floor space and redecorated its entire store, according to E. T. Dooley, proprietor.

BUYER'S GUIDE
SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE REFRIGERATION AND AIR CONDITIONING INDUSTRIES

INDUCED MOTION!
INSURES RAPID HEAT TRANSFER

WRITE FOR OUR NEW 1937 CATALOG

The Refrigerant Goes 'Round and 'Round the inside of the tube in a swirling motion "washing" all sides of all the tubes in the coils made by Manufacturers Fin Coil Co., equipped with THERMO FIN. This induced motion spreads the refrigerant to the outside of the inner walls adding greatly to the effective surface of the fin coil.
THERMO FIN is a patented feature.

MANUFACTURERS FIN COIL CO.
2505-7 SO. PULASKI ROAD CHICAGO, ILL.

5700 Items for You!

- WRITE FOR 164 Page Catalog of BARGAINS
- 16 COMPLETE STOCKS—One as close as Your Telephone
- ONE STOP SERVICE—Refrigeration—Electric—Hardware—Motors
- 18 ENGINEERS at YOUR SERVICE—Let us engineer your jobs
- ⅓ H.P. Refrigerator Motor. A real bargain at $7.95 net
- WE PAY NO RETAIL TAX Because we sell Dealers only
- SPECIAL OFFER—$1.00 Tester and $2.50 Flaring Tool both for $1.99

Atlanta—Boston—Chicago—Cincinnati—Cleveland—Dallas—Detroit
Kansas City, Mo.—Los Angeles—Minneapolis—New York
Philadelphia—Richmond—San Francisco—Seattle—St. Louis

W.W. GRAINGER INC. GRAINGER BLDG. 825 CONGRESS ST. CHICAGO

A NEW Market — A NEW Field

REMANUFACTURED
(RECONDITIONED)
FRIGIDAIRE - KELVINATOR - GENERAL ELECTRIC - ELECTROLUX - NORGE & others
FOR EXPORT and DOMESTIC USE

Dealers!! Build Store Traffic—Reach the lower income bracket buying group with Federal Remanufactured—Nationally Advertised—used Refrigerators. Rebuilt from top to bottom. That's why they look like new and most important "work like new" and carry our 1 Year full guarantee.

Starting at $30 F.O.B. N.Y. FEDERAL REFRIGERATOR CORP.
57 EAST 25th ST., NEW YORK CITY
References: Dun & Bradstreet—Nat'l City Bank

PARTS-SUPPLIES-TOOLS for REFRIGERATION-AIR CONDITIONING

Complete Stock—Quick Service

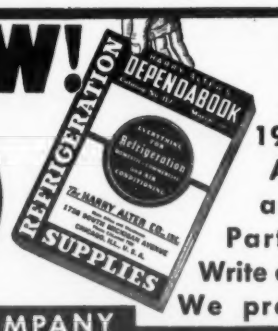
One-day service on your order for any parts, supplies or tools you may need for any type of refrigerator or air conditioner. QUALITY MERCHANDISE, absolutely guaranteed and offered at the lowest prices. Deal with us—obtain all your needs from one source—and rely absolutely on getting exactly what you order. WHOLESALE ONLY for your protection. Request big, complete, new catalog on your business card or letterhead. It's FREE.

SEND FOR BIG FREE CATALOG

AIRO SUPPLY CO. 2732 N. Ashland Ave., CHICAGO 17 West 60th Street, NEW YORK

ALL YOUR NEEDS FROM ONE SOURCE

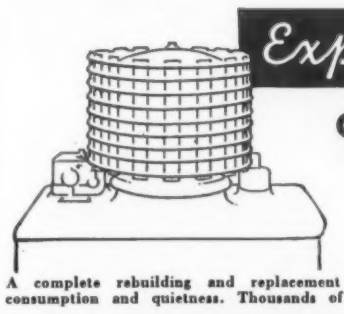
It's NEW! SEND FOR IT NOW!



HARRY ALTER'S
1937 catalog of Air Conditioning and Refrigeration Parts and Supplies.
Write on your letterhead.
We protect the dealer.

HARRY ALTER COMPANY
1728 S. Michigan Ave., Chicago
BRANCHES
NEW YORK·ST. LOUIS·CLEVELAND

Expert REBUILDING & REPAIR



General Electric MONITOR TOP UNITS $25
All Household Models
MAJESTIC HERMETIC UNITS—$20.50
SERVEL HERMETIC UNITS—$18.50
F.O.B. OUR FACTORY
One Year Unconditional Guarantee

A complete rebuilding and replacement service. All units tested for temperature, cycling, wattage consumption and quietness. Thousands of units rebuilt in past seven years. We guarantee satisfaction.

REFRIGERATION MAINTENANCE CORP.
365 EAST ILLINOIS ST. — CHICAGO, ILLINOIS

Write for this FREE book

of
Commercial Refrigeration Controls

Condensed catalog gives full description of 9100 Refrigeration Controls of pressure, vacuum and temperature types . . . this booklet will be mailed to you postpaid on request.

SQUARE D EVERYWHERE
SQUARE D COMPANY

Detroit's FINEST LOCATION

If "convenience" is important to you then by all means select Hotel Tuller - right in the heart of downtown Detroit - close to stores, theatres, office buildings, and all transportation. Excellent food served at low prices in the Tuller Coffee Shop and Cafeteria...Detroit's friendliest hotel.

HOTEL TULLER

800 ROOMS
WITH BATH FROM $2 SINGLE
Robert Hensley, Manager
FACING GRAND CIRCUS PARK

ONE OF THE SIXTEEN
ALBERT PICK HOTELS
4500 ROOMS IN 8 STATES

CHICAGO, ILL. ..... GREAT NORTHERN
DETROIT, MICHIGAN ..... TULLER
DAYTON, OHIO ..... MIAMI
COLUMBUS, OHIO ..... CHITTENDEN
COLUMBUS, OHIO ..... FORT HAYES
TOLEDO, OHIO ..... FORT MEIGS
CINCINNATI, OHIO . FOUNTAIN SQUARE
CANTON, OHIO ..... BELDEN
INDIANAPOLIS, INDIANA ..... ANTLERS
ANDERSON, INDIANA ..... ANDERSON
TERRE HAUTE, INDIANA . TERRE HAUTE
ASHLAND, KENTUCKY ..... VENTURA
OWENSBORO, KENTUCKY . OWENSBORO
JACKSON, TENNESSEE . NEW SOUTHERN
ST. LOUIS, MO. ..... MARK TWAIN
WACO, TEXAS ..... RALEIGH

PICK HOTELS

PICK, in print, should always suggest ALBERT PICK HOTELS

THE NEWSPAPER OF THE INDUSTRY

AIR CONDITIONING AND

WRITTEN TO BE READ ON ARRIVAL

REFRIGERATION NEWS

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 20, NO. 17, SERIAL NO. 423
ISSUED EVERY WEDNESDAY

Entered as second-class matter Aug. 1, 1927

DETROIT, MICHIGAN, APRIL 28, 1937

Copyright, 1937, by Business News Pub. Co.

FOUR DOLLARS PER YEAR
TWENTY CENTS PER COPY

UNIVERSITY OF FLORIDA
LIBRARY
BRANCH OF THE
COLLEGE OF AGRICULTURE

Air Conditioning Selling & Design Discussed at Wisconsin Conference

* * *

450 Delegates Present As Carrier Discusses The Industry's Future

MADISON, Wis.—Sales and technical problems commanded the attention of 450 delegates to the Conference on Air Conditioning and Automatic Heating conducted by the mechanical engineering department and extension division of the University of Wisconsin here April 21-23.

The conference, and the exhibits of 37 manufacturers and distributors, was under the direction of G. L. Larson, past president of the American Society of Heating & Ventilating Engineers and chairman of the university's department of mechanical engineering.

Willis H. Carrier, chairman of the board of Carrier Corp. and a past president of the ASHVE and of the American Society of Refrigerating Engineers, delivered the principal address of the conference on the subject, "A Pioneer Looks Into the Future of Air Conditioning." The audience of conference delegates hearing Mr. Carrier's discussion was swelled by approximately 200 nonmembers of the industry.

"We frequently heard during the last depression that some new industry would bring us out of the years of need and unemployment," he said. "Every depression has been followed by the birth of a new industry. The development of the clipper ships, agricultural machinery, railroads and steamships, the steel industry and radio and refrigeration all assisted in bringing us out of previous depressions.

"During the last depression, many predicted that aeronautics and air conditioning would herald the new return to prosperity. Those predictions seem to have been well founded."

The speaker stressed the need of truthful advertising by members of the industry, declaring that if promotional activities are kept on a high ethical plane "the home market will be the great market for air conditioning in the future."

He outlined changes in home construction that must be made if year-around air conditioning is to be installed and operated economically and efficiently, and predicted that the ultimate development in window construction would be a double glass with a shallow hermetically sealed air space between the panes.

No great decrease in air-conditioning cost can be looked for in the immediate future, Mr. Carrier said. Cooling is an old art, already developed to a high state of mechanical efficiency, he declared.

Some reductions may be expected in distribution, while labor costs are now low and material costs are high, the speaker said. Both motors and heat-transfer surfaces have been highly perfected and the compressor, contrary to public conception, is a small item of expense, he pointed out. Operating costs will not be greatly improved, he said, except through possible improvement in power rates.

(Concluded on Page 21, Column 1)

Westchester Association Votes 'No' on Taking Up Electrolux Plan

WHITE PLAINS, N. Y.—Refusal to cooperate in the April sales campaign featuring a $15 trade-in on ice boxes for Electrolux refrigerators, recently launched by Consolidated Edison Co., Inc., of New York City, was voted here last week by the Westchester Gas & Electrical Appliance Dealers Association, according to John K. Cooper, president of the dealers' association.

Rejection of the utility's campaign plan was made on the grounds that 90% of the organization's membership feel that participation would result in unfavorable competition with their electric refrigeration merchandising programs, Mr. Cooper said. The dealers' association has 78 members throughout the Westchester county area.

"About half a dozen members of our organization have been handling Electrolux gas refrigerators right along and are continuing to do so," Mr. Cooper stated, "but so far as I know not one of the other 72 members is cooperating with the plan."

In making this announcement, the dealers' association president stressed the point that his organization's relations with Westchester Lighting Co., local utility and subsidiary of Consolidated Edison, were entirely amicable. The utility has shown dealers excellent cooperation at all times, Mr. Cooper declared.

Inland to Build $800,000 Plant

DAYTON — Construction was scheduled to start this week on an $800,000 addition to the facilities of Inland Mfg. Division of General Motors Corp., according to Wallace S. Whittaker, general manager.

The new building, a one-story structure approximately a city block square and fronting on Inland Ave., will have 80,000 sq. ft. of manufacturing floor space. It will be immediately east of the two-story office building built by Inland during 1935 and early 1936.

Space to be taken up by the new structure was used for parking space. Replacement parking facilities have been arranged by purchasing an additional five acres of ground near Abbey Ave., Mr. Whittaker said.

New building and equipment will

(Concluded on Page 2, Column 2)

ACMA March Sales Beat Any Quarter in 1936

Association Members Sell Air Conditioning Worth $17,137,870

WASHINGTON, D. C. — Installed cost of air-conditioning equipment sold by members of Air Conditioning Manufacturers' Association during March totaled $17,137,870, greater than the best quarter (three-month period) of 1936, reports William B. Henderson, executive vice president of the association.

Sales during the April-June period of 1936, that year's best quarter, were $16,586,170. January-March totals this year exceed that mark by 90.8%, totaling $31,648,290.

Compared with the $11,005,980 sold during the January-March quarter last year, the 1937 first quarter figures represent an increase of 187.5%.

March sales increased 209.8% over the $5,531,665 reported for the month last year. The month also exceeded the combined total for January and February of this year, which was $14,512,000.

The best three successive months in 1936 were May, June, and July, when sales totaled $17,772,212. March sales this year came close to equalling these three months, and the first quarter 1937 total exceeds them by 78%.

Copeland Production Stopped By Strikers

DETROIT, April 27—Copeland Refrigeration Corp.'s production operations at its plant here stopped early today when a group of about 75 pickets, claiming to be affiliated with Mechanic's Educational Society of America, commenced picketing the company's Holden Ave. plant here.

Of the approximately 75 men parading before the Copeland plant today bearing placards reading "M.E.S.A. On Strike At Copeland," it is alleged by company officials that only about 10 are Copeland employes, the remainder being picketers from other organizations promoting strike activities in Detroit.

According to Copeland officials, the strike came about following failure of a committee of three company employes, claiming to represent M.E.S.A., to effect reinstatement of J. Moran and D. Paris, former Copeland employes, during negotiations with the company's officers.

The Copeland management offered

(Concluded on Page 2, Column 4)

Syracuse Believes It Will Be Site Of Carrier Plant

NEWARK — Although Carrier Corp. is considering the expansion of its manufacturing facilities, and has received offers from several eastern cities, Carrier officials refused to confirm a current report that the company had settled on Syracuse, N. Y., as a factory site.

Carrier has received propositions from Syracuse, Albany, and Wilmington, Del., among other cities, but no definite agreement has been consummated with any city, declared Walter A. Bowe, advertising and sales promotion manager of the company.

In its April 18 issue, the "Syracuse Herald" had said that Carrier would

(Concluded on Page 2, Column 5)

First Contract Under N. Y. Price Law Set

BROOKLYN—First major appliance price establishment contract under New York State's Feld-Crawford Act was scheduled to be signed early this week between the Maytag Co. and Tarzian Bros., local appliance dealership.

Following signing of the contract fixing Maytag washer prices, notices will be sent to about 100 retailers in the New York area who are served out of Shephard Warehouse, it is understood.

Knowledge of the Maytag agreement became known following a meeting between washer firms and a committee of the Electrical Appliance Dealers Association of Brook-

(Concluded on Page 28, Column 4)

Utica Dealers Plan Price Law Action

UTICA, N. Y.—To prevent the local refrigeration market from "being undermined by chiseling," appliance dealers and distributors in the Utica territory are preparing to cooperate under provisions of the Feld-Crawford Act, declares G. P. Moore, secretary of the Utica & Mohawk Valley Radio & Appliance Dealers' Association, Inc.

As a result of several smaller meetings in past weeks, a group of 23 association members met last week at local Chamber of Commerce headquarters to decide upon a course of action.

Although no definite action has as yet been taken, it is expected that the association will soon announce a program establishing price contracts in line with the law's provisions, Mr. Moore said.

Cincinnati G-E Dealers Adopt Trade-in Code

First Dealer to Bid Sets Price and Registers It With Association

By James R. McCallum

CINCINNATI—To stop competitive bidding on electric refrigerator trade-ins, General Electric dealers here have agreed to cooperate with Cincinnati Electrical Association under a code preventing any one of them from raising the trade-in allowance previously offered by another G-E dealer.

"If the plan is successful," states Eugene Zachman, secretary of the association, "we hope to apply it to the entire retail refrigeration field here."

In accordance with the agreement, every G-E dealer in Greater Cincinnati is registered with the association under a code number known only to himself and to Mr. Zachman.

Whenever any customer asks a G-E dealer for a quotation on a used box, the dealer makes his own appraisal and offers the trade-in allowance which he considers proper. The dealer then reports this price, and the name of the party to whom it was quoted, to the association, where it is registered under the dealer's code number and under the prospect's name.

Any other G-E dealer making a bid for that particular sale must, before quoting any trade-in allowance, check with the association to find whether or not any of his fellow dealers has previously registered an allowance for the prospect's used unit. If such an allowance has been registered, the second dealer may not offer the prospect any more than an equal amount.

Dayton Show Week Set for May 3-8

DAYTON—Gas and Electric Refrigeration Week, to be co-sponsored May 3 to 8 by Gas and Electric League of Dayton, Dayton Power & Light Co., and local gas and electric refrigerator distributors, will be announced Saturday, May 1, in a 12-page broadside to be distributed to 54,000 homes in this territory, according to J. Fitzpatrick, sales promotion manager of the utility.

Contents of the broadside will be of editorial nature, Mr. Fitzpatrick revealed, and no direct advertising will be included. All refrigerator pictures in the broadside will show the doors closed, and only the size and price of each model will be contained in the caption.

Front page of the broadside will be reproduced in poster form and

(Concluded on Page 2, Column 1)

Ranges and Ironers Show Biggest Sales Gain in Washington in 1936

WASHINGTON, D. C.—Although refrigeration sales showed the largest unit volume, sales of electric ranges and ironers showed the greatest percentage of increase in the Washington, D. C., territory during 1936, according to the report of the Electric Institute of Washington, based on distributor data.

Electric range sales totaled 2,697 units during last year, an increase

(Concluded on Page 28, Column 3)

COMING

A Series of Feature Articles in the 13 issues during May, June and July of special interest and value to all Refrigeration and Air Conditioning Salesmen ... PLUS a FREE BOOKLET giving comparative specifications and convenience features of 243 models of 29 principal makes of household electric refrigerators. All for $1.00. See order card inside.

American Equipment Now Prohibited in Australia Declares Davies

DETROIT—Australia now prohibits the sale at any price of refrigeration and air-conditioning equipment—with the exception of sylphon bellows—manufactured in the United States of America, according to R. M. Davies, assistant general manager of New Systems Telephones Pty., Ltd., of Sydney.

Mr. Davies spent an afternoon in the office of the NEWS on his way back from Philadelphia, where he had been in conference with officials of the Philco Radio & Television Corp. He showed especial interest in self-contained air-conditioning equipment and room coolers.

New Systems Telephones distrib-

(Concluded on Page 2, Column 1)

Dealers Plan Dayton Show Promotion

(*Concluded from Page 1, Column 5*)
distributed to dealers for display in their windows.

Electric and gas refrigeration also will be featured on page one of the refrigeration-week issue of Dayton's Shopping News.

All printed promotion for the drive will be unified by a special insignia which will appear in all refrigeration-week advertisements. Participating dealers may be identified by this insignia on their window posters.

Spot announcements concerning the week-long campaign will be broadcast over local radio stations WHIO and WSMK. These announcements will urge listeners to "drop in to see your nearest dealer."

This much of the advertising for refrigeration week will be financed on an equal-share basis by the city's active refrigerator distributors and the utility.

American Refrigerators Prohibited in Australia

(*Concluded from Page 1, Column 5*)
utes electric refrigerators made by the Electricity Meter Mfg. Co. of Sydney, which works under a patent agreement with Leonard. These refrigerators carry the brand names "ElectrICE" and "Leonard." The firm also has distribution rights for Hallstrom kerosene-fired absorption refrigerators in New South Wales.

Most Australian imports of refrigeration products now come from Canada, burdened with only a moderate tariff, Mr. Davies declared.

New Systems Telephones, which was originally formed to sell interoffice communication service, is probably the largest refrigeration and radio selling organization in Australia. Mr. Davies is accompanied on his American tour by the managing director of his company, J. I. Carroll.

Parents' Magazine to Have Home Development Section

NEW YORK CITY—Beginning in its May issue, *Parents' Magazine* will publish a home development section, containing articles dealing with home building, enlarging, modernizing, and decorating problems, with particular attention to the needs of the children in the family.

Correction

Kerotest Mfg. Co., Omitted from List of Parts Makers Association

In the story on page 1 of the March 31 issue of AIR CONDITIONING AND REFRIGERATION NEWS under the heading "50 Members in Association of Parts Makers," the name of the Kerotest Mfg. Co. of Pittsburgh was omitted from the list of present members of the Refrigeration Supplies and Parts Manufacturers' Association.

The Kerotest company has been a member of the Parts Manufacturers' Association since its inception, and J. S. Forbes, Kerotest treasurer, is a vice president of the group.

New Inland Plant Opens Aug. 1

(*Concluded from Page 1, Column 2*)
be needed in the manufacturing program for 1938 products, work on which must begin in late summer under General Motors' employment stabilization plan, he added. The building is expected to be completed by Aug. 1.

Founded in 1922 with a payroll of 150 persons as a wood-working plant for the manufacture of wooden steering wheels, Inland Mfg. Division has grown steadily, moving its activities into the rubber field in 1928-29. The company's payroll on March 31 showed 3,121 persons employed.

Products manufactured by the company include automobile steering wheels, running boards, weather strips, metal-rubber motor mounts, metal and rubber ice trays and grids for electric refrigerators, ice cream cabinet lids, cements, and many hard and soft rubber parts.

Completion of the addition will give the company manufacturing facilities totaling 663,000 sq. ft.

Last year, approximately $1,000,000 was spent on a large factory addition and manufacturing equipment, and in 1935 more than $400,000 was spent for construction including the new office building.

By the end of 1937, the building program will have entailed an expenditure totaling $2,200,000, covering an employes' cafeteria, personnel department offices, medical department offices, and emergency hospital, an addition to the extensive new manufacturing facilities described above.

Demonstrate the JEWETT alongside any other refrigerator

Prove to your prospects the Jewett Humidifier keeps fresh vegetables 40% fresher.

The Jewett has everything that every one looks for in a refrigerator of outstanding quality. And in addition it features the exclusive Humidifier Compartment that keeps fresh vegetables 40% fresher. By comparison, by demonstration the Jewett can get the business for you in the toughest competitive market. Write or wire for the facts and exclusive franchise proposition.

THE JEWETT REFRIGERATOR CO., INC. BUFFALO, NEW YORK

Established 1849

Consider these almost unbelievable results

Celery, by weight, lost 2% in Humidifier Compartment — in regular compartment 63%. A difference of 61%.

Lettuce, by weight, lost 4% in Humidifier Compartment — in regular compartment 27%. A difference of 23%.

Cauliflower, by weight, lost 4½% in Humidifier Compartment — in regular compartment 27½%. Difference of 23%.

Parsley, by weight, lost 2% in Humidifier Compartment — in regular compartment 44%. Difference of 42%.

Endive, by weight, lost 1½% in Humidifier — in regular compartment 40%. Difference of 38½%.

JEWETT

Philadelphia Association Is Sponsor of Sales Campaigns in Chester & Pottstown

PHILADELPHIA — The spring campaign of the electric refrigeration group of the Electrical Association of Philadelphia began recently with refrigerator promotion "weeks" in Philadelphia and Chester, Pa., and a three-day refrigerator show in Pottstown, Pa.

Limerick contests were features of the Chester and Pottstown campaigns, refrigerators being given as first prizes.

Beginning officially on April 5, the association's spring campaign will continue to the middle of June. Plans for the campaign include extensive institutional advertising in newspapers and 24 wall signs painted in selected locations. The signs, some of them as large as 20 ft. by 30 ft., will be utilized during a six-month period.

Throughout the territory, retail outlets have made special plans for presenting the public complete lines of their respectively handled refrigerators.

George R. Conover is managing director of the Philadelphia association.

INDIVIDUAL EXHIBITS

In place of the usual type of refrigerator show, during which a number of dealers exhibit together under one roof, Philadelphia and Chester refrigerator men cooperated with the Electrical Association to put on an Electric Refrigeration Week in their own localities beginning April 4. Each week was one of concentrated refrigerator promotion during which the public was directed to the exhibits of individual outlets.

The local Philadelphia campaign was publicised by special sections in local and suburban papers at the first of the week and other advertising continuing through it.

In distributors' showrooms, department stores, and dealers outlets, full 1937 refrigerator lines were shown of the following 11 makes:

Coldspot, Copeland, Crosley, Frigidaire, General Electric, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, and Westinghouse.

Chester's Electric Refrigeration Week, starting April 4, was the latter part of an 11-day campaign which started March 31 and ended April 10. Sixteen dealers, members of the Electrical Association, cooperated.

Total refrigerator sales made during the campaign were 162, and many prospect names were secured. A number of other appliances, due to increased store traffic, also were sold.

CHESTER PROMOTION

Publicity was begun by distribution of 20,000 special 10-page refrigerator sections, published in the Chester "Times," March 31, to the doors of better-home prospects, and continuous advertising was done in three Delaware county newspapers throughout the campaign.

To create public interest, a limerick contest was held with a $200 refrigerator, selected from any of the 10 makes advertised, offered as first prize. Display cards for identifying the participating dealers and announcing the contest were supplied by the Electric Association.

Five thousand limerick blanks were supplied to dealers for counter distribution, contestants were directed to deposit their limericks in one of the cooperating stores, and 1,424 of them were submitted.

Participating dealers agreed to advertise only 1937 models at regular list prices, and no obsolete models or cut prices were offered during the campaign. Refrigerator displays were maintained in the windows and showrooms of dealers throughout the period.

The 10 refrigerator makes represented in the Chester promotion were:

Coldspot, Frigidaire, G-E, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, and Westinghouse.

In Pottstown, nine cooperating dealer members of the Electrical Association put on a three-day Electric Refrigeration Show at the Elks' Home, April 8, 9, and 10, with an estimated attendance of 6,000. According to a subsequent canvass of participating dealers, 65 sales were made.

A $150 refrigerator, selected from any of the advertised lines, was offered as prize in the Pottstown limerick contest, and 10,000 blanks were distributed throughout the trading area 10 days before the exhibition opened. Contestants deposited 903 limericks at the show.

In Pottstown also, the association supplied showroom and window display cards inviting the public in to secure limerick blanks, and dealers maintained refrigeration displays previous to and during the three-day exhibit.

The 10 makes of refrigerators which were represented in the Pottstown exhibition were:

Copeland, Frigidaire, G-E, Grunow, Hotpoint, Kelvinator, Norge, Sparton, Stewart-Warner, and Westinghouse.

Strikers Want Two Workers Reinstated

(*Concluded from Page 1, Column 3*)
to turn the matter over to the National Labor Relations Board for decision, the alternative suggested in the M.E.S.A. letter, but this apparently did not satisfy the committee.

The original move made by the union was in the form of a letter addressed to the Copeland production manager demanding reinstatement of Moran, who was recently discharged for inefficiency, and Paris, who voluntarily resigned. Moran was employed as a tool grinder, while Paris worked in another branch of the production department.

Three Copeland employes were named in the M.E.S.A. letter as a committee to deal with the company management as representatives for the union's membership in the plant, which, it is understood, represents about 10% of the total number of men employed.

A meeting between these three representatives and the management was immediately called, and lasted several hours. At the request of the delegation representing the union, the meeting was adjourned until Tuesday night, April 20, at which time the three M.E.S.A. delegates, Moran, and two organizers for the union were present.

At this meeting, it is said, Moran was asked to present his side of the case and was heard by all present to admit his inefficiency as a tool grinder over a period of the past several months. Members of the union committee asked Moran for a direct statement as to whether or not he admitted inefficiency.

The former Copeland worker replied that over a period of several months he had not performed his duties as a tool grinder as he had previously.

During this meeting with the management, it was brought out that Moran had been warned several times by the production manager and his foreman that he was losing in efficiency and that several machine shop employes had complained because Moran allegedly was retarding their opportunities to earn satisfactory bonuses for increased production.

It was at this time, Copeland officials declare, that the M.E.S.A. delegates again demanded that Moran and Paris be reinstated. Paris, it is said, resigned voluntarily in "sympathy" with Moran after his discharge.

Following this meeting, it is understood that the union began agitation for a strike in the Copeland plant and distributed cards to all employes ordering a sit-down strike between the hours of 10 and 11 Monday morning of this week. Approximately 10% of the men employed in the plant ceased their work at this time following the strike order.

This morning, employes approaching the plant to go to their work found the picket line of about 75 men parading before the building.

Company officials, office employes, and persons having business with the company were allowed to pass through the picket line, but production department employes were not allowed to enter.

In official statement issued by the Copeland management, it was said that the company felt it had acted fairly with the union in offering to leave the case to the decision of the National Labor Relations Board, and that it believed the number of employes on strike to be in no way representative of the wishes of the great majority of the plant's workers.

Mayor of Syracuse Releases Complete Carrier 'Plans'

(*Concluded from Page 1, Column 4*)
reopen the old Franklin automobile plant about July 1 in an expansion program, and that the city would deed the property to the company and cancel all real estate taxes due, in consideration of the company's engaging to hire qualified workers from the relief rolls.

"According to the concurrent announcement from the mayor's office and the chamber of commerce, 400 technicians are to be employed at the plant before Aug. 1, and 1,500 additional workers to be engaged locally on or before Nov. 1," the "Herald's" story said.

"Willis H. Carrier, recognized as the father of air conditioning, and chairman of the board of the internationally known concern, will move to Syracuse with the research division of his company, comprising the 400 technicians and their families."

To ready the plant for Carrier occupancy, a WPA project would be introduced through William P. Lynch, administrator, by which eligible workers on relief rolls would be employed in cleaning up the property, the story stated.

The Franklin plant, where between 2,000 and 3,000 workers were employed in automobile-making and die-casting at the peak of operations, has been closed since April 1, 1934.

The city acquired the plant at a referee's sale on a tax foreclosure action March 29, on a claim for $439,125 in arrears taxation.

"Syracuse spokesmen in the pending re-occupation of the plant forecast that 2,000 persons will be employed in the factory before the end of the year, and 3,000 to 3,500 within 18 months to two years, if business expansion in the air-conditioning field continues at its present rate," the "Herald" said.

"In the Carrier Corp. expansion, three floors of the factory are to be used at the beginning of factory operations, and three floors of the four-story office structure.

"The 400 technicians being brought to Syracuse in the research division will constitute the vanguard of an additional work army in the Syracuse industrial field with a payroll of more than $4,000,000 a year, it is said.

"Carrier operations in Syracuse will involve total expenditure of $150,000 a week in the community, including payrolls, or about $7,500,000 a year.

"The Chamber of Commerce, with a committee already at work following up the preliminaries conducted since December, is in the field to obtain the $250,000 to be expended locally in rehabilitating the plant, about one-third of the incidental cost of the Carrier Corp. expansion program," the newspaper stated.

In his announcement, Mayor Marvin of Syracuse said that the city intends to deed the Franklin plant to the corporation and to cancel all taxes, county as well as city. Tax claims held by the county against the city, as owner of the plant, total about $93,000. City taxpayers meet more than four-fifths of county taxes.

". . . The plant occupation will start in July and be completed by November," the mayor's announcement said. "It means employment for about 2,000 people, 400 of them technical men of the research division, to move to Syracuse in July.

"Outside of technical men, as far as possible workers will be employed from the qualified unemployed on relief . . .

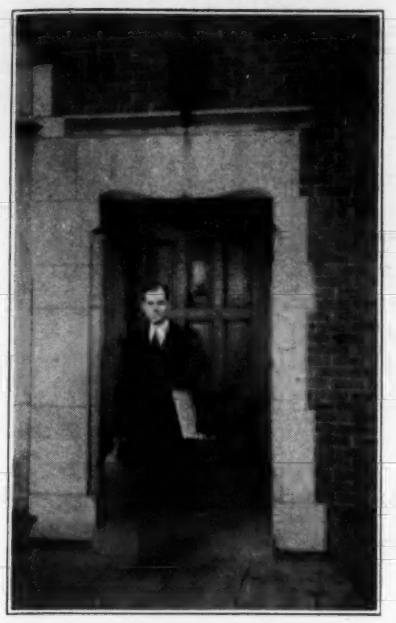
"It will mean expenditure of $150,000 weekly in Syracuse, I am assured, $80,000 in payrolls.

"A project is to be introduced, which Mr. Lynch, the WPA director, believes will be approved, affording WPA cooperation in cleaning up the plant beforehand.

"There is no intention in this of going into the trade field, such as carpentry, electrical work, and other skilled work being done by usual business arrangement."

As to protection of the city interest, Mayor Marvin said that all legal safeguards will be provided for reversion of property to city ownership, in event of any contingency arising beyond the power of the Carrier Corp. to carry out its planned expansion, and maintain the plant here on an agreed basis, the "Herald" story said.

Good Morning!



W. Paul Jones, vice president of Fairbanks-Morse Home Appliances, at the entrance to his Indianapolis home.

Chapa Made President Of Leonard Crest Club

DETROIT—Felix A. Chapa, Jr., of the Chapa Sales Co., San Antonio, Tex., has been named honorary president for 1937 of the Crest Club, Leonard Refrigerator Co.'s national honorary organization for retail salesmen. This appointment Mr. Chapa merited by having highest volume of sales among club members during 1936.

The following five salesmen, each of whom was high sales man in his district for 1936, were appointed honorary vice presidents of the Crest Club for 1937: Oran Hill, Linn & Scruggs Co., Decatur, Ill.; Alex Ronay, of the Alex Ronay dealership, Fairmont, W. Va.; H. H. Hunter, Haddox Electric Co., Los Angeles; David Pennock, Snellenburg Co., Philadelphia, and John H. Strickland, Byck Electric Co., Inc., Savannah, Ga.

Brandt Goes to G-E Radio Division

BALTIMORE—Arthur A. Brandt has resigned as sales manager of the Washington division of Kelvinator Corp.'s Baltimore-Washington, D. C. branch to accept a position as sales promotion and advertising manager of the radio division of General Electric Co., Bridgeport, Conn.

Mr. Brandt was formerly sales promotion and advertising manager of RCA-Victor Mfg. Co., and had been associated with Barbour & Ross and Southern Wholesalers, Inc., as refrigeration sales manager prior to joining Kelvinator.

For the present, Washington Kelvinator will be operated by D. A. Dimitry, branch manager, and C. H. Herrlich, sales manager at Baltimore.

'Spike' Slavin Sells 35 Boxes in Town of 1,000

ELDRED, Pa.—In this community of only 1,000 Slavin Electric Co., General Electric dealer, sold 35 refrigerators during 1936. "Spike" Slavin is owner of the company and F. E. Trank, who was elected "Congressman" in the G-E "Refrigerania" campaign last fall for his sales achievements, is his assistant.

Page-Williamson to Distribute Kelvinator in Carolina

CHARLOTTE, N. C.—Page-Williamson, Inc., has been appointed Kelvinator distributor for the Piedmont Carolinas and central North Carolina, announces W. H. Williamson, president of the corporation.

Cities included in this territory are: Winston-Salem, Greensboro, Reidsville, Burlington, Hickory, Salisbury, Charlotte, and Hendersonville in North Carolina; and Spartanburg, Greenville, Anderson, York, Lancaster, Gaffney, and Chester in S. Carolina.

N.R.D.G.A. Sets Up Arbitration Panel on Return Goods Disputes

NEW YORK CITY—Formation of an arbitration panel for settlement of return-goods disputes between manufacturers and retailers has been announced by Channing E. Sweitzer, managing director of National Retail Dry Goods Association.

Twenty-one retailers and buying office representatives have been appointed to this panel, which is part of the program of the Vendors' Relations Committee of N.R.D.G.A. and the Apparel Industries Inter-Trade Bureau.

Circumstances in which returns are due either to the manufacturer, the retailer, or both have been defined by the two associations participating in the program for adjustment of such disagreements.

Kresge Opens Appliance Store in Plainfield

NEWARK, N. J.—Opening of the second Kresge Department Store branch with sales activities devoted exclusively to merchandising prominent lines of household refrigerators has been announced by F. R. Brachtold, major appliance manager, at headquarters here. The new store is located at 119 Park Ave., Plainfield.

Two years ago, the Kresge company opened its "feeler" store in Elizabeth, N. J., marking what is believed to be the first venture of a major department store into the field of maintaining separate outlets for electric refrigeration other than those located in the main store or its branches.

The new Plainfield store handles six lines of household refrigerators—Crosley, Frigidaire, General Electric, Kelvinator, Norge, and Westinghouse. The same lines are carried in the Elizabeth outlet, at the main Kresge store in Newark, and in the company's branches in other states.

"By setting up home-town displays in two prominent New Jersey cities, we believe we have overcome a constant consumer complaint of inability to secure convenient parking places around our store here in Newark," said Mr. Brachtold. "No longer is it difficult for Elizabeth and Plainfield people to come to Newark to get to our refrigeration sales floor—it has been taken to them in their own towns."

In the new Plainfield store, a modernistic decorative color scheme of green and cream is used.

The refrigerator displays line the walls on two sides with a few boxes placed at various points in the center, and interspersed with several comfortable lounging chairs of modernistic design placed where customers sitting in them may view to advantage the six lines shown.

J. T. Butler is manager of the new Kresge outlet.

Brace Elected President of Toronto Electric Club

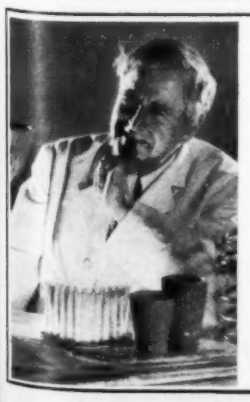
TORONTO, Ont., Canada—J. H. Brace was elected to succeed M. J. McHenry as president of the Electric Club of Toronto at the recent annual meeting of that organization.

Other new officers are: vice presidents, M. White, W. E. P. Duncan, F. R. Jeffrey, and H. D. Rothwell; secretary W. D. Corcoran; and treasurer, F. Francis, H. P. L. Hillman and Willis Maclachlan were elected auditors.

Directors were elected as follows: G. W. Austen, W. H. C. Seeley, A. Scholfield, J. S. Keenan, G. W. Lawrence, C. Gilvie, O. S. Mitchell, A. Powell, C. W. Hookway, J. G. Rogan, N. Knight, M. B. Hastings, T. S. Jardine, George T. Dale, O. W. Titus, C. E. Schwenger, and Percy Dobson.

Ice Industries Convention To Be Held Nov. 9 to 12

CLEVELAND—Twentieth national convention of the nation's ice industry will be held Nov. 9 to 12 at Hotel Cleveland and Cleveland College Auditorium, according to Mount Taylor, secretary, National Association of Ice Industries. The hotel will serve as convention headquarters and will house the various exhibits while meetings will be held in the auditorium.



"Don't get the idea, young man, that you are the one who sold me a Copeland. I asked five or six other druggists who have Copelands, and THEY are the ones who convinced me."

Yes, you'll find Copeland Commercial Refrigeration Units the easiest to sell because of their successful record in thousands of soda fountains, restaurants, hotels, meat shops and dairies.

Write for our Sales Plan

COPELAND

REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

READY! two new Seeger cases

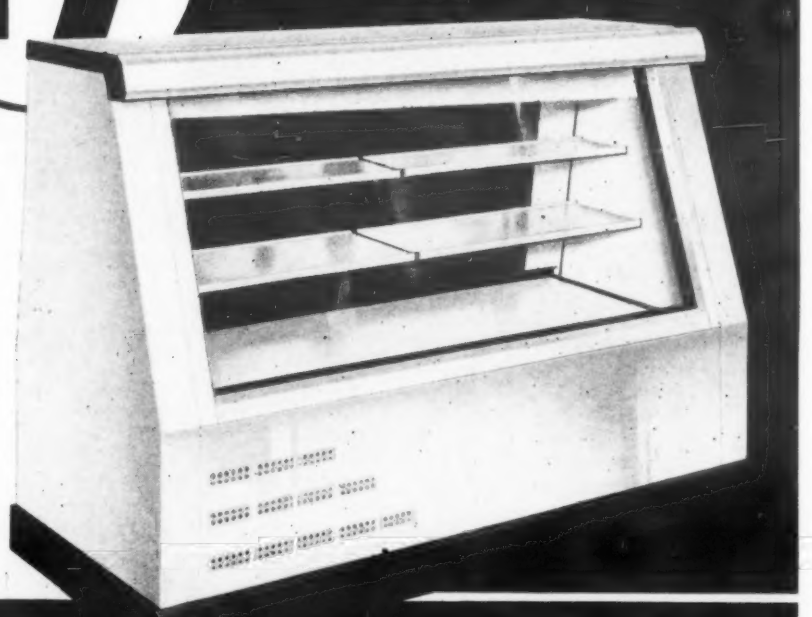
HIGH QUALITY LOW PRICE

series 16

Series 16, the first of this year's new models. Completely all porcelain inside and out including the storage compartment. It's the outstanding value in the display case field - a case with which to meet competition.

SELF series 17 CONTAINED

Series 17, a new compact 6 ft. self contained case, a type of case much needed by the small store without basement facilities, and a great case for the large food market for the display of specials, in temporary or permanent locations—just plug it in —no special wiring required.



Seeger REFRIGERATOR COMPANY

SAINT PAUL, MINNESOTA

New York — Boston — Chicago — Los Angeles — San Francisco

Special Representatives: Meyer Smith Co. Buffalo N. Y. Seeger-Philadelphia, Inc. Philadelphia, Pa.

Sunbeam Executives Get Down to Shirtsleeves as Cabinet Production Starts Rolling

Sunbeam Electric, which is currently turning out 1,450 Coldspot units daily for Sears Roebuck, has just begun cabinet manufacture. (1) Vice President J. Henry Schroeder watches workmen putting final touches on the big new cabinet plant. (2, 3, and 4) Chief Engineer Howard Dennedy tells President W. A. Carson that he is producing about 75 cabinets a day—just as a starter.

— WHAT DEALERS ARE SAYING & DOING —

Hartford Dealer Sets 1,500 Range Quota With 'All-Electric' Kitchen Theme Of 1937 Selling Campaign

By T. T. Quinn

Orkil Using 'All-Electric' Kitchen Idea to Push Ranges

What Orkil Electric Co., General Electric distributor, thinks of electric range prospects for 1937 is evidenced by the fact that the company has set a quota of 1,500 ranges in its territory, 750 of these to be sold in Hartford, and 750 to be sold by members of the company's own retail sales staff.

The company has 75 dealers in its territory, compared with 35 or so last June, when it replaced Modern Household Appliances as distributor. All dealers sell the complete G-E line—although ranges go much better in the Hartford area than anywhere else.

In addition to its own retail outlet, Orkil (after Orrin P. Kilbourne, president) has Hurwit Furniture Co., G. Fox Co., and Brown-Thomson Co. as G-E range dealers in Hartford.

Fifteen salesmen work out of Orkil's retail store, their work supervised by a manager and a supervisor. Indicative of what the distributorship is doing with other major appliances is the 22 carloads of refrigerators sold between Dec. 1 and Feb. 1.

To sell electric ranges this year, Orkil will take the "all-electric kitchen" story into the home, using it as the entering wedge in creating customer attention and interest.

KITCHEN PLANNING

The company has its own Kitchen Planning Department, presided over by Gordon McMaster, which is available at all times to persons building new homes or remodeling old ones. Plans will cover the complete kitchen, all laid out, and the prospect can either buy all the appliances at one time, in the case of a new home, or add them piece by piece, in the case of an existing residence.

Orkil's enthusiasm for the "kitchen idea," it develops, is the result of Mr. Kilbourne's experience with an all-electric kitchen in his own home before he ever got into the appliance merchandising field. He sold himself on the appliance business, it seems, and that's why the whole organization is out after business in a hammer-and-tongs fashion.

UTILITY COOPERATION

Spring campaign on electric ranges was started in February, in cooperation with Hartford Electric Light Co. Backed by extensive newspaper advertising, the campaign had as an outstanding feature a financing tie-up with the utility, whereby the customer might buy a G-E range and pay for it along with the regular monthly electric light bill.

In addition, a campaign of similar (but not quite so far-reaching) proportions is planned in the territory around Hartford reached by the power lines, where electricity is cheap, but not quite as low as in the city itself. This territory is the potential for a goodly number of 1937 range sales.

A third drive will be conducted in the areas in which electric power is higher than in either of the two first territories, but nevertheless is still available. Campaign in this territory probably will be more for educational purposes than for actual sales, aimed primarily at the "those who can afford it" market.

Cooking schools have been found an excellent means of electric range promotion. Not content with those conducted regularly by the utility, Orkil holds several additional ones of its own. The company's home economist, Miss Hazel N. Fletcher, presides—and the number of live prospects obtained always more than justifies the effort expended, I was told.

Utility Helps Promote Newer Appliances

An all-product distributor if ever there was one, the company's range of activities is so varied that I just couldn't keep my narrator, Miss Margaret McCarthy, from straying off into one of them—the electric dishwasher and Disposall, being promoted in combination through cooperation with Connecticut Light & Power Co.

The utility displays dishwashers and Disposalls in its local offices throughout the Orkil territory, does no selling, but turns prospect names over to the distributor for follow-ups and closing. Since these products are still in the pioneering stages, Orkil considers this a fine way in which to bring them to public attention.

Some of Connecticut Light & Power's willingness to assist in promoting the dishwasher-Disposall may be due to the fact that Orkil recently installed such equipment in the home of J. Henry Rorabach, political bigwig who is president of the utility company.

A help or not, it's still one of the installations Orkil people like most to talk about.

SMART SALESMEN

Smart salesmen aplenty dot the Orkil roster, but three of the most unusual operators are two brothers, Gus and Fred Zercher, and Jack Peters.

A seven or eight-time Topper, Gus Zercher is well known to most men in the G-E selling organization by reputation, if not personally. He sold for Modern Household Appliances, Orkil's predecessor, and we met him when we visited that company last year.

Gus is a believer in the "bird dog" type of selling—that is, he recruits everybody he can, from newsboys up to ministers, to help him in getting business. He lets his helpers make most of the original contacts, help build up interest, and then he comes around and knocks off the sale.

Fred Zercher, on the other hand, loves canvassing. Nobody's going to do his groundwork for him, if he can help it. He digs 'em out, follows 'em up, and cracks down on them, in person. Around Orkil's retail store, they say Fred actually gets mad if something happens to upset his regular canvassing routine.

Jack Peters uses still another type of selling technique. "Quality Merchandise to Quality Folks" is his slogan. He specializes on the wealthy and the moderately well-to-do, where the larger orders lie—if you can get in to present your story. Polished and popular, Mr. Peters can meet these people on their own ground, and his sales place him among Orkil's most valuable men.

Flint-Bruce Favors Individual Advertising

While cooperation of the Hartford utility company has been invaluable in getting the electric range business away to a flying start, Flint-Bruce furniture store has found its best results with individual rather than cooperative advertising, said Norman McCurdy, head of the store's appliance department.

"Cooperative advertising to sell an idea is a great thing," Mr. McCurdy said, "but it's for the smaller store, not the large one.

"For instance, when you really want to smash across a selling scheme, and get the public to thinking of one appliance or another, a large ad is the thing. To sell your

(*Concluded on Page 5, Column 1*)

The hazards of handling liquids and gases under high pressure conditions in the refrigeration industry have been definitely eliminated through the development of the Kerotest line of Automatic Pressure Relief Valves.

This is a natural development since Kerotest engineers matriculated in the technique of safe gas control away back in 1914 when they were faced with the necessity of designing valves for their own use in what was then considered, the largest commercial welding shop in the world.

As a result, nearly a quarter of a century of progressive development is behind the design of the Kerotest line of Automatic Relief Valves, truly the ultimate in safety and dependability. To maximum safety has been added maximum *economy*, since these valves are also designed to prevent undue loss of valuable refrigerants.

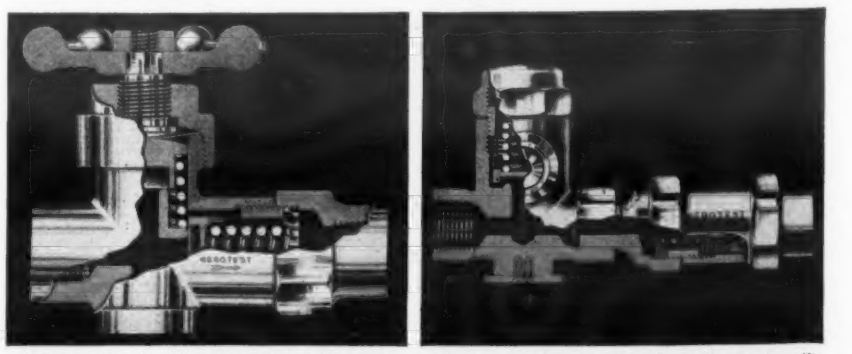
Like *trusted sentinels* they stand a day and night watch on dangerous pressures—automatic safeguards that are approved by municipal safety code authorities throughout the country.

Warehouse stocks of Kerotest products are readily available through Kerotest Jobbers in every important industrial center.

Kerotest Straight-Through Automatic Relief Valves Types 40 and 40-S. For insertion in a line connecting directly to the atmosphere.

Kerotest Safety Relief Valve Type 41. For small service drums. Endorsed by leading refrigerant manufacturers.

Kerotest Small Safety Relief Valve Type 36. For Liquid Receivers. Release directly to the atmosphere.



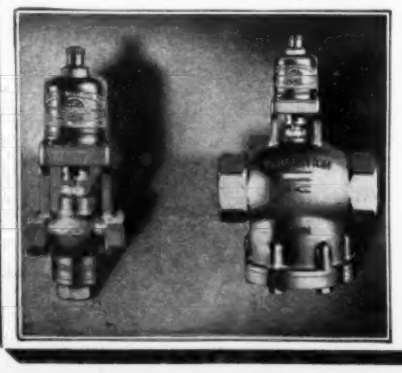
Kerotest Combination Manual and Automatic Pressure Relief Valve Type 787 and 788.

Kerotest "High Side to Low Side to Atmosphere" Pressure Relief Valve Type 679.

These Valves are approved for use under many municipal safety codes.

KEROTEST
REGISTERED U.S. PAT. OFF.

KEROTEST MANUFACTURING CO., Pittsburgh, Pa.



PERFECTION
Condensing Water Regulators
are Certified to Excel

Ask for catalog covering complete line of Condensing Water Regulators, Compressor Parts, Valves and Fittings

PERFECTION REFRIGERATION PARTS CO.
HARVEY, ILLINOIS

Some Dealers Complain that Utility Range Promotion Has Brought Price-Cutters Into Hartford Selling Picture

(*Concluded from Page 4, Column 3*)

own services, however, you have to use individual display space.

RESULTS DOUBTFUL

"Of course, cooperative advertising is a great thing for the smaller stores, who perhaps couldn't afford to take enough space individually to make much of a showing. But our experience has been that the money you put into an ad of that kind is largely donated—you can never tell whether it produces or not.

"With 15 or 20 names at the bottom of the ad, yours is just lost in the shuffle. You may sell the idea, but you won't sell your own store as 'where to get it' without some additional individual effort."

Voicing praise for the utility's efforts in making the Hartford public electric range conscious, Mr. McCurdy at the same time thought that perhaps in its enthusiasm to put the electric range across, things had been carried a step too far.

Like Mr. Cashman, he saw too many dealers in Hartford for the good of the "old reliables" like Flint-Bruce, who have price structures to uphold, a reputation to maintain.

Any profit these dealers made, as he saw it, was just so much "velvet," because ordinarily they wouldn't have been in the field; and besides, they stood to make their regular and usual profit from some other line of business.

Reports had been recurrent lately of cut-price activities, Mr. McCurdy said, and the Electric Appliance Council was planning, with the utility's cooperation, to do something toward weeding out undesirable operators.

Just how this was to come about hadn't as yet been decided. Shopping outlying dealers might be a good idea, with price violators being cut off from participation in the utility's promotion plans.

Flint-Bruce handles six electric range lines—Hotpoint, Electromaster, Crawford, Universal, Monarch, and Kelvinator—and has nine men in its appliance department who sell all products handled.

STORE POLICY HINDERS

Range sales have been good despite, rather than because of, the store's policies, the manager asserted. He's been trying, without much success, to break the store's habit of letting one salesman see a prospect all the way through, instead of turning the job over to specialists, in the case of electrical equipment.

If a furniture salesman (who works on the first floor, the appliance department being downstairs) shows a customer a rug, and he then wants to look at an electric range, the salesman comes right down with him and goes through a "demonstration."

Mr. McCurdy says that these men know nothing about the range's features, and hurt more than they help—but it's the store's policy, and he hasn't been able to do anything about it.

He wants the furniture man to bring the prospect downstairs, introduce him to a range salesman, and then beat it.

The furniture salesman who dug him out would get a small commission on the sale, if made—and both the salesman and the store would be money ahead.

Bauer Manager Blames Utility For Price-Cutting Situation

In detailing what he termed "the good and the bad" of the electric range situation in Hartford, Bert Sneed, sales manager of Bauer & Co., Inc., praised the utility's efforts toward cooperation in an effort to cut out the "cat and dog fighting" among competitive salesmen, but blamed the company for making most of this competition possible.

Bauer sells Frigidaire and Standard, Universal, and Westinghouse ranges. John and Oscar Bauer are owners of the company, which was originally an electrical contracting organization, and still does a good business in that field. Four salesmen sell all appliances.

"The electric company's 'bonus system' for salesmen was a good idea," Mr. Sneed said, "and gave the men something worthwhile to work for in addition to their regular commissions.

"Under the plan, salesmen got bonuses of $3 for each refrigerator, $4 for each range, $5 for every refrigerator-range combination, and $5 for every water heater sold. It was a great scheme to get salesmen 'hopped up' over their work.

"The utility figured each appliance sold was worth so much to it in additional revenue, and the bonus system was designed to 'cut' the salesmen in on some of this for his efforts.

"Nobody could have any complaints about that, or about the Ace Club which was recently formed in Hartford, to give salesmen a chance to know each other, to meet regularly and discuss problems, swap ideas, and generally gain a closer appreciation of the other fellow's angle.

"The club, of course, was originated by the utility in the hope of cutting down a lot of the 'cat and dog' fighting that's been going on around Hartford lately, especially over electric range sales.

PROMOTED TOO FAST

"You see, the utility went after range business too fast. Refrigerator sales had been built up, and the emphasis was put on ranges—load was the objective, plenty of it, and as quickly as possible.

"Figuring that if prospects saw ranges for sale in lots of places, they'd think the appliance was commonplace and therefore buy more quickly, the utility extended its rental range and financing plans to everybody and anybody—in fact, people who never should be selling appliances at all were encouraged to get into the field.

"What happened was that a good many small operators got into the field, and cut down profits for those legitimate dealers who might have made a good living in the field.

"All kinds of small stores are selling ranges—well, showing them, anyway—especially in the towns right around Hartford.

ONE-MAN OPERATIONS

"A lot of these stores are one-man operations, with no overhead to pay, no selling expense to consider. These 'dealers' will cut half their profit, if need be, to make a sale. Some of them used to be factory and office workers who decided: I guess I'll go in business for myself.

"Profit, to these people, doesn't mean a thing. They made a certain definite salary at their former jobs, and if they can show about the same amount for their week of range selling, they're satisfied. They don't want to do any better than they did before—living costs are always the same, to them—and so they'll cut a price within $5 or $10 of cost, just to be able to say, 'I made the sale.'

"The Better Business Bureau has been asked to look into this price-cutting situation. Just what they plan to do about it I can't say, but I understand one thing that could be done is to shop these dealers, compare prices, and 'crack down' on the flagrant violators . . . 'wildcats,' we call them.

"Why, one of these dealers recently advertised a range for sale at a really attractive price. When customers got out there, they found that it included just the bare range, without any of the various accessories necessary for its operation.

"All these, of course, were for sale, but the price for the whole assembly totaled right up to what other dealers were selling the complete unit for. It's cases like this that make legitimate dealers say that something ought to be done about it—quickly."

In accord with the rental range idea, in theory, Mr. Sneed thinks that the rental price is too low in Hartford. It ought to be $2 a month instead of $1.30, in his opinion.

"This so-called 'Yankee shrewdness' is keeping away a lot of business," he says. "New Englanders like to consider themselves shrewd bargainers, and this $1.30 a month plan gives a lot of them a chance to show their smartness.

"They figure up how long they'll probably live, how much a range would cost them if they bought it outright, and then consider how cheap it is to just keep on renting their range, with service and repairs free. Most of the time, they decide to keep the rental.

"So some dealer is just out of a sale. If the rental were $2 or somewhere in that neighborhood, they'd buy."

Bauer sells more ranges to tenant families than to owners, Mr. Sneed says, and here's how:

One of the tenant's principal objections to buying a range is that he's apt to move into a section where there's no range wiring, and be unable to use his appliance.

Bauer salesmen meet this with two suggestions:

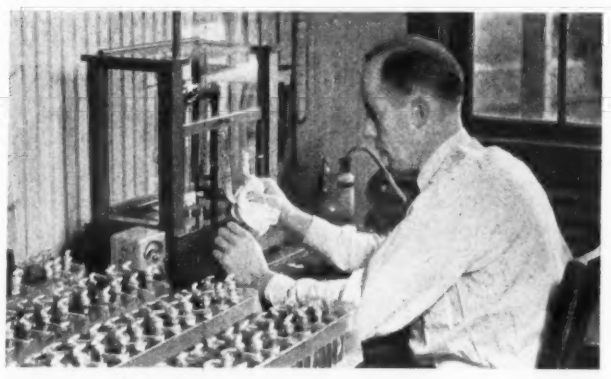
1. When you move, move to a house that's wired. The utility has a list of wired homes, and you can tell whether the house you're considering is proper or not before you close the deal.

2. Have the landlord wire the house for the electric range. Or you wire it, and send the bill to him. Most landlords, believe it or not, are glad to do this for the tenant. They figure, and rightly, that if the house is fixed with this additional convenience, the tenant isn't apt to move so soon.

ANSUL'S 3 FACTOR SATISFACTION

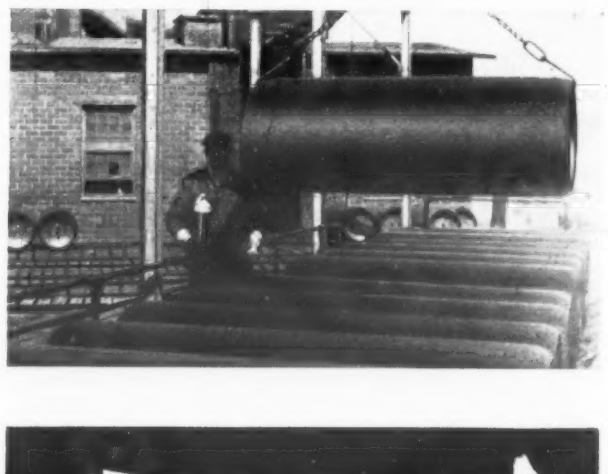
GUARANTEED QUALITY

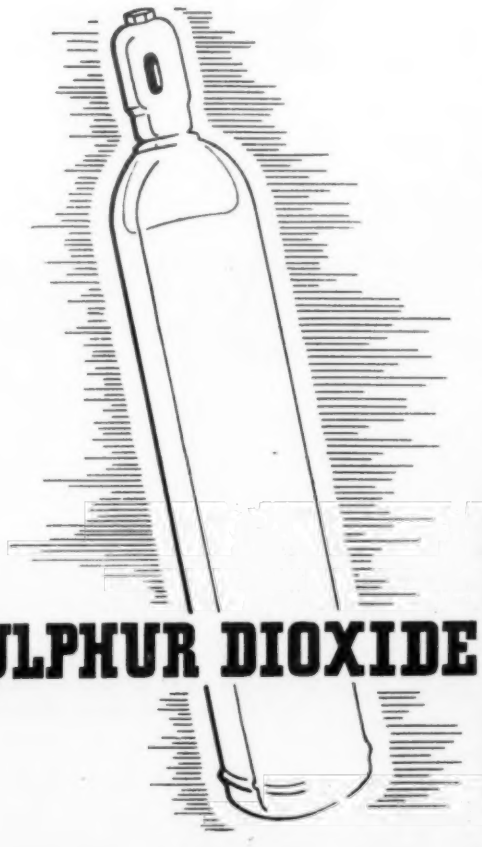
Samples are taken from every cylinder of sulphur dioxide and methyl chloride, and an individual analysis is made of each sample. The results of the analysis are recorded on tags attached to the cylinder valve, and are your guarantee that the refrigerants are perfect for refrigeration work.



COMPLETE CYLINDER SIZES

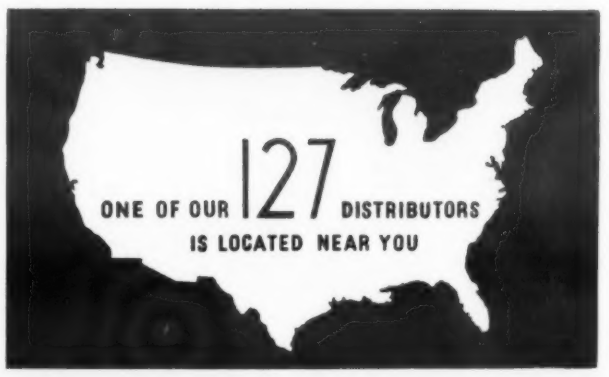
Ansul's range of cylinder sizes include everything from the six pound cylinder to the one ton drum. From the manufacturer who requires a large tonnage to the service man who wants only a few pounds for a particular job, every user will find a cylinder to fit his need.





THOROUGH DISTRIBUTION

Because Ansul's 127 thoroughly reliable and enthusiastic distributors and jobbers are anxious to serve you, their warehouses are always well stocked with all sizes of cylinders that you may need. Write for the name of your nearest Ansul warehouse stock.



SULPHUR DIOXIDE

ANSUL CHEMICAL COMPANY
MARINETTE • • WISCONSIN

METHYL CHLORIDE

— HOW SUCCESSFUL DEALERS OPERATE —

Westchester Dealer Sells at Rate of Cubic Foot Per Minute; Wagner Does What His Competitors Do Not

By W. H. Long

Sullivan Is Westchester's Refrigeration Historian

White Plains, county seat of Westchester, is a community of fine homes and one of the richest towns in the East. Here John J. Sullivan, G-E retailer for the reorganized Rex Cole organization, and Jack Cooper, veteran of 16 years in the electrical appliance business in the town, have well-appointed stores and, incidentally, enthusiastic praise for informational features of the NEWS.

Mr. Sullivan is literally a walking encyclopedia on the history of refrigeration merchandising in Westchester, and after watching him sell a General Electric 6-cu. ft. box at the rate of a cubic foot per minute to a woman who came into his store as "cold" as the unseasonable spring day outside, one could see where the genial, witty White Plains dealer gets his sales wisdom.

Commendation for the good work the Westchester Gas & Electrical Appliance Dealers Association is doing in the territory is heard from Mr. Sullivan. He says that this organization, formed a little more than a year ago, has contributed much to fostering amicable and mutually profitable dealer relations among its nearly four score members.

PRAISE FOR UTILITY

Mr. Sullivan also has praise for the aid which has been given Westchester independents by its utility, Westchester Lighting Co., in abandoning the sale of electrical appliances on June 1 of last year and in promotional work in cooperation with independent dealers.

Prior to the present controversy over the $15 Electrolux trade-in offer on ice boxes, he says, all was quiet and friendly on the county's dealer-utility front.

The Monitor Top M-8 and B-8 are the largest selling G-E's on Mr. Sullivan's floor this spring. He notes a swing toward refrigerators of larger cubic footage this year in most sales, due mainly, he believes, to the average customer desiring to spend more for refrigeration in proportion to other appliances and to provide for too much space rather than just enough, as during the depression years when 4 and 5-cu. ft. sizes were the most popular sellers in the line.

Being Oldest Dealership Pays Dividends, Coopers Report

At 27 Mamaroneck Ave., White Plains, Jack Cooper, Sr., and Jack Cooper, Jr., looking more like older and younger brother than father and son, handle Frigidaire, Crosley, Hotpoint, and Potter amid a maze of radios and appliances. Their busy service department is downstairs, the product of the elder Cooper's 16 years in the appliance business in White Plains, and apparently one of the busiest angles of the store's work judging from frequent calls.

Plenty of newspaper advertising striking unique notes and "using the user" sum up Mr. Cooper's sales philosophy. He modestly relates that his position as the oldest dealer in White Plains has paid him not only dividends in sales but also in friendship. He's "Jack" to the town.

Back in 1928, Mr. Cooper and his brother, Ted, who handles the dealership's service department, built the first model "electrical and radio" home in the country at 113 Smith Ave., White Plains. This house, one of the forerunners of today's "all-electric" homes, attracted wide attention and much publicity in New York papers. It was erected at a cost of $17,500, then considered reasonable, but a significant contrast to the $7,500 Kelvin Home, its modern counterpart.

Specialty Dealers or Small Retail Outlets, Wagner Asks

In his quiet second-floor office over the Electric Servant Co.'s showroom at 14 Main St., Yonkers, N. Y., "Chet" Wagner held up his desk pad.

"I'd rather sell this 10-cent pad and **prove** to the customer that it's worth $5 than do anything else I know," declared the dynamic dealer whose firm sold 600 refrigerators from its line of General Electric, Westinghouse, Crosley, Electrolux, and Briggs last year.

When we walked into Electric Servant's large showroom, the floor manager pointed to a man talking to three customers in a corner and said:

"If you want to talk to a man with ideas, there he is." It was Mr. Wagner.

His views on his hobby, specialty selling, are based on 15 years of merchandising everything from toasters to sun lamps, and are backed by the fact that Electric Servant has just passed making a $3,000,000 net over that period.

Mr. Wagner believes electric refrigeration manufacturers are approaching the day when they must decide between specialty dealers and small retail outlets for the lion's share of their sales volumes. He resents the influx of tire and accessory stores and "jillopy" dealers into the sales picture in the metropolitan area.

'CHISELING MUST STOP'

"Manufacturers must soon come to a decision as to maintaining list prices with every means at their command," says Mr. Wagner. "The industry has talked and talked about it, and nothing much has been done. Chiseling goes right on—I guess the best of us all do it in some form or other—but some day it has to stop, and manufacturers must stop it.

"It's just the kind of chiseling I'm talking about that caused sales to drop here in Yonkers from $168,000 in 1932 to $30,000 last year," he continued.

"If manufacturers will set their quotas and then leave selling to their specialty dealer outlets, business will boom. There's plenty here to be done, but nobody is going to do it and nobody's going to make a living until we settle down and act like business men instead of back-alley peddlers," the Yonkers man declared.

His chief complaint in regard to manufacturers' handling of their dealerships is that he believes the industry isn't satisfied to leave an established dealer in possession of his territory.

"In no time at all, franchises are given to three or four newcomers who know nothing about the business, and then where are we?" Mr. Wagner asked.

In selling on his own floor, Mr. Wagner fights excessive discount and allowance practices of competitors by switching the attention of the prospect from a line where another dealer will give a discount to a line where he knows no discount can be obtained anywhere in the territory.

On the same subject, Mr. Wagner claims that an established specialty dealer with a heavy investment in building, stock, and valuable local reputation for fair dealing cannot afford to meet price-cutting dealers on their own grounds—underselling.

PRICE AGREEMENT

Electric Servant has a working agreement with the other largest dealer in Yonkers regarding maintenance of list prices, and both parties have found it mutually advantageous, Mr. Wagner said, since its inception at the beginning of the present year. He believes they have succeeded in beating price-cutting competition by convincing the public that good refrigeration costs what it is advertised to cost, and no less.

Where once he employed 25 outside salesmen in his territory, the Yonkers dealer now uses about half a dozen regular full-time salesmen; he calls them his "dollar a day" men, and it is upon this basis, plus the usual commissions, that they work.

According to Mr. Wagner, if a salesman can't support himself by selling after a few weeks' breaking-in, he should turn his efforts to other fields.

"I'd rather send out seven men averaging 20 calls each per day—about 3,500 calls per month for the corps—than spend $300 on a single newspaper advertisement which might well be overlooked or just casually glanced at by the same 3,500 people," he declared.

"I spend the same amount of money for their salaries, plus a larger one for a supervisor, than I would for a single newspaper ad.

ORIGINALITY

"Whatever sales methods other dealers around here use," he continued, "I use the opposite. That's specialty selling. If their salesmen canvass, we use phone calls; if they depend on newspaper advertising, we use direct mail.

"In other words, we avoid sameness, and also the existing chief complaint that most housewives have against selling tactics of our competitors. If Mrs. Smith hates salesmen who ring her doorbell, we approach her by direct mail or phone, and find she appreciates our consideration."

To reduce chiseling to a minimum, Mr. Wagner has a plan of his own to offer the industry.

This is, that every dealer be required to post a cash bond of anywhere from $100 to $500, according to his size, with his local dealer association or distributor, which would be forfeited whenever he was convicted of price-cutting below list standards.

"When it started to come out of his own hide," says Mr. Wagner, "you'd see the chiseling stop soon enough."

Behind every successful specialty business, he says, there must be an alert, well-trained service department. His own, he declares, has been instructed to move as fast as the law will allow when a customer's call for service comes in.

"We tell customers that if they buy a refrigerator from Electric Servant, it will last twice as long. Why?—Service.

"And they believe it, too," he went on. "That may sound like an exaggeration, but there's more than an element of truth in it, for what happens to a box when two or three amateurs start to take it apart and mess with it?

"Many a good refrigerator has been ruined by an incompetent service man, and the customer blamed it on the manufacturer as cheap merchandise."

Before leaving Mr. Wagner, he gave us his pet theory for the correction of most national economic, as well as refrigeration, ills.

"I believe the government should place higher taxes on obsolete merchandise," said Mr. Wagner. "It's one way of assuring turnover and establishing markets. If you own a nice home, the more you add to it, the higher your taxes go. If you let it run down, they reduce your taxes. I believe that everything that is new or improved is worthy of being taxed less.

"Let's suppose that we had a law which stated that when your refrigerator became five years old, it was obsolete, and a small tax which increased with each succeeding year was placed on it. People would soon be buying new boxes, and the whole industry and public as well would profit.

"Extend the same principle to all branches of business and life, and we'd have a steady turnover and everybody would prosper," he concluded.

MANHATTAN

V BELTS

LONGER LIFE

Better performance . . . because internal heat is minimized by Manhattan's exclusive construction: the endless Whipcord is completely floated in rubber, welded into a strong tension member which is placed in the neutral axis area. Above the tension area is an extensible section; below a compression section . . Repeated tests prove Manhattan V-Belts run smoothly . . . noiselessly . . . enduringly.

THE MANHATTAN RUBBER MFG. DIV.
Of Raybestos-Manhattan, Inc.
45 Townsend St. Passaic, N. J.

INCREASE SALES WITH— SPARTON'S exclusive THRIFTER

that, fitted with six ebony topped containers, on the door, gives extra storage space and makes food saving easy and convenient.

MIRACULOUS PERFORMANCE

Standing silent, efficient guard over its owner's purse SPARTON'S beautifully silver faced Enchanted Clock ticks off sales by defrosting daily without attention. Freezing coils, by its automatic magic, are always kept free of costly ice blankets. Thus the least possible amount of electric current is used and power cost is much reduced. Water changes to tinkling ice cubes without incantations and as if by sorcery all manner of delicacies and tempting foods are prepared for all the family to enjoy. Truly the Enchanted Clock is the outstanding sales feature in Refrigeration today.

SELL SPARTON EXCLUSIVE

And SPARTON'S VEGABIN

a step saving, dry storage feature built in below the food chamber and accessible without opening refrigerator door.

100% Automatic Defrosting . . . Economy Features . . . and have no competition

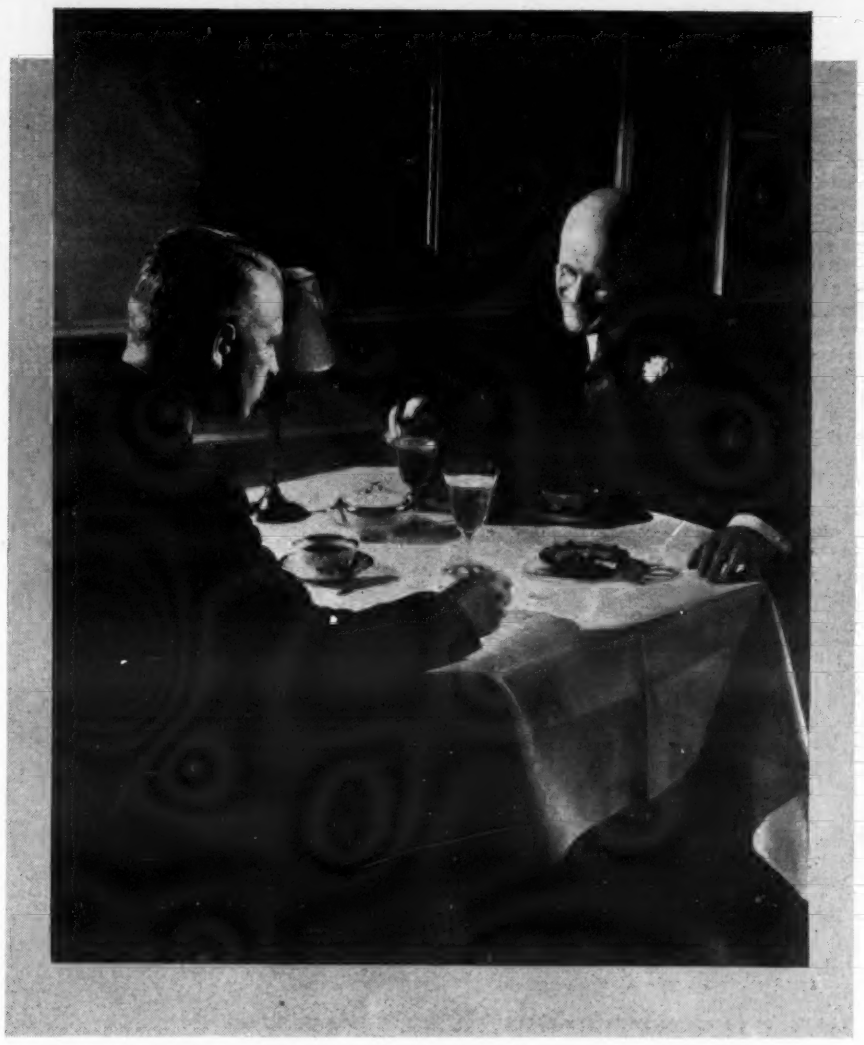
SPARTON'S great 1937 line consists of 8 beautifully restyled models all employing the dry expansion system of refrigeration. Dealers who close with SPARTON this year will ring up many, many dollars in profits.

Write or wire for literature and complete information.

The SPARKS-WITHINGTON CO., Jackson, Mich. Sparton of Canada, Ltd., London, Ont., Canada

To the restaurant owner

AIR CONDITIONING *Means* COMFORT COOLING



SOON after theater proprietors started to produce summer profits by affording patrons the comfort of "air conditioning" in hot weather, restaurant owners began to sit up and take notice.

If comfort cooling could convert the usual losses of the summer season into profits for theaters, would it not be possible to increase revenue in restaurants by offering this same attraction to their patrons?

Such reasoning seemed logical and soon announcements "*Air Conditioned—Cooled by . . .* " were displayed by eating places to attract more summer patronage. Pioneers in this movement got immediate and satisfactory results. "Air conditioning," affording comfort cooling, quickly paid its way. The idea soon spread to thousands of restaurants and continues to spread today.

To the restaurant owner, as to the theater proprietor, "air conditioning" means cooling. They were always expected to supply heating for the comfort of customers in winter, but to supply cooling in summer gave them a dramatic new sales appeal that was instantly appreciated and resulted in immediate profits. "Air conditioning" quickly increased sales volume.

The man on the street, the woman in the home, the general public when thinking of "air conditioning" thinks of comfort cooling. This first impression, gained in theaters and restaurants, remains uppermost in mind and unless an "air-conditioning" installation includes cooling, it just isn't "air conditioning."

With this impression firmly held in the public mind, combined with the fact that the cooling and dehumidifying was developed by the refrigeration industry, it is but natural that buyers of "air-conditioning" equipment should look to the experienced refrigeration organization as the logical source of supply.

Manufacturers of "air-conditioning" equipment in facing the problems of marketing their products may indeed do well to follow the same lines of reasoning and give first consideration to the established distributor-dealer organizations that have been so successful in selling refrigeration equipment of all kinds.

These distributor-dealer groups can be effectively contacted through "The Newspaper of the Industry," whose weekly issues they are accustomed to reading and which is the only trade publication bringing them the news of the cooling function.

AIR CONDITIONING AND REFRIGERATION NEWS
5229 CASS AVE., DETROIT, MICHIGAN

Representatives: John B. Gallagher Co., Incorporated, 11 West 42nd Street, New York, New York . . . . . Lewis & Noelle, 612 North Michigan, Chicago, Illinois

Danville Kelvinator & Schmidt Distributor in New Quarters

DANVILLE, Va. — Smith's, Inc., Kelvinator distributor, recently held formal opening of its new showroom at the corner of Main and Bridge Sts. The corporation formerly distributed Kelvinator products here under the name of Smith Motors & Appliances, Inc., Smith's, Inc., being organized on Nov. 1, 1936.

Harvey Smith is president of the company which, in addition to its Kelvinator line of electric refrigerators, washers, oil burners, and electric and gas ranges, also distributes C. Schmidt commercial refrigeration equipment and display cases.

Paul Reynolds and A. J. Graham, formerly with Clements, Chism & Parker, have joined the Smith sales staff.

Consumer's Power to Extend Rural Lines in 1937

JACKSON, Mich.—From 15,000 to 20,000 Michigan farm families will be added to Consumer Power Co.'s list of power customers, under the utility's 1937 rural-electrification program. Users in the company's territory now total 28,709.

In the first two months of 1937, 502 miles of rural lines were built—10 times as many as during the same period for 1936, 16 miles more than the total rural construction for the first seven months of last year.

An average of 3 kwh. per day was used on each customer farm during January, 1937, it is reported. According to the company, this amount of electricity is sufficient to pump water, do the washing and ironing, supply good lighting, and operate the radio, refrigerator, vacuum sweeper, clocks, percolator, and toaster.

Community Storehouses Use Norge Equipment

SALT LAKE CITY—Norge Intermountain Co. has made several recent installations of commercial refrigeration equipment in community storehouses for rural customers, a new type of service rapidly finding favor in this section.

Individual storage compartments are rented to ranch and farm owners on a yearly basis, and are usually centrally located so as to be accessible to both regular and occasional renters at all times.

By using the lockers, farmers are assured adequate refrigeration for the meats and perishables produced on their farms, pending use by the farmers themselves or placing on the market when prices are higher than during the regular season.

Interior arrangement of the storehouses is much like the usual locker room, each compartment being glass enclosed, with a screen of mesh wire, and fitted with the owner's padlock.

First of these community plants was built by M. E. Runner, head of the commercial division of Norge Intermountain Co., who is sponsoring their extension in this territory. Mr. Runner formerly was president of Armstrong Mfg. Co. of Spokane, refrigeration specialists.

St. Vincent College Buys Servel Refrigeration

LATROBE, Pa.—Servel electric refrigeration equipment for its new storage plant has been purchased by St. Vincent college here from Pittsburgh Refrigeration Co., Servel distributor in the Pittsburgh territory.

Equipment includes one model WD-100 and one model WE-150 Servel machine units.

Servel Issues Complete Commercial Line Catalog

EVANSVILLE, Ind.—The electric refrigeration and air-conditioning division of Servel, Inc., has issued a catalog covering the complete line of Servel commercial refrigerating machine units, in sizes from ¼ to 15 hp.

Both air and water-cooled machines are described in the catalog, which is designed for use as a sales reference manual. The material was formerly a part of Servel's commercial sales data book.

Pelco Distributor Opens Washington Branch

BALTIMORE — Coincident with moving its headquarters office into a four-story building at 15 S. Howard St. here, Electrical Products, Inc., distributor of Pelco beverage coolers, recently opened a branch office containing sales, showroom, and warehousing facilities at 805 Tenth St., N. W. Washington, D. C. R. Goldman and Theodore Ember head the company.

—COMMERCIAL REFRIGERATION—

Selling Salesmen and Engineering Engineers Is Krich Formula for Successful Commercial Business

By W. H. Long

NEWARK, N. J.—"Salesmen should sell, and engineers should engineer—that's my formula for selling commercial refrigeration and avoiding the evil of under-engineering our jobs," says B. Gordon ("Barney") Krich, manager of the commercial refrigeration and air-conditioning department for Krich-Radisco, Inc., northern New Jersey Kelvinator distributor here, and youngest of the three Krich brothers associated with their father, Harry Krich, in selling Kelvinator.

Differentiation between the functions of the two divisions of his 23-man staff has been one of Mr. Krich's main objectives since he recently took over the firm's commercial department, after heading department store and major account sales for the domestic refrigeration division for several years.

Krich-Radisco's retail sales territory in commercial extends over four of New Jersey's most populous counties—Union, Essex, Passaic, and Hudson—in which "Barney" and his crew of 10 salesmen sell direct to the retail consumer.

The distributorship maintains 15 commercial dealers, each of which has an exclusive Kelvinator franchise in his area throughout other sections of the state.

The four-county retail territory handled by the distributorship is split up into two sections, Essex-Union and Hudson-Passaic, in each of which a Krich-Radisco sales supervisor operates with five salesmen. To the 15 commercial dealers holding franchises in the "outside" counties, the firm extends the aid of its sales promotion and personnel department, holding frequent sales schools and dealer meetings.

COMMERCIAL'S PROBLEMS

"I believe that under-engineering and price-competition chiseling are the two greatest problems facing commercial refrigeration merchandising today," declared Mr. Krich. "And until they are conquered and the business put on a sound basis of salesmanship coupled with real engineering, commercial is never going to realize its potentialities as a growing division of the industry.

"At present, commercial refrigeration selling is attracting the wrong kind of salesmen," he continued. "Too many 'envelope' sales engineers are operating. They go into a customer's restaurant or bar or whatever it is and figure up the job on the back of an envelope in a few minutes—and then consider they have done something by closing the sale and estimating the job all in one morning or afternoon.

"And then what happens? To meet or beat a competitor's estimate on cost they under-estimate the job and follow that up by under-engineering it, and within a few weeks the customer finds himself with a compressor or motor too small to provide proper temperatures.

UNDER-ENGINEERING

"If the job is installed early in the season, by mid-summer the customer finds his equipment operating five or 10 degrees above normal, he curses the firm that installed it, and the whole industry gets a blackeye," declared Mr. Krich.

"That's why I say," he added, "that salesmen should stick to selling the customer and leave engineering to the engineers. When the salesman steps out of the picture, the engineer steps in with his cost and estimate sheets. That's the way we operate, and we think it's the best way to assure a well-balanced job that will last for years and do what it was meant to do in its particular application."

SALES ARGUMENTS

In outlining his sales policy, the Newark man pointed out a three-fold argument which he teaches his commercial salesmen to advance:

(1) The reliability of Krich-Radisco's method of selling only after its staff engineers have gone over the job from every angle of proper refrigeration engineering.

(2) The reputation for service and economy of the product they are selling.

(3) The reputation of Krich-Radisco's commercial department, backed by the installations it has made on similar jobs in the same area.

"Strange as it may sound to you," said Mr. Krich, "we **don't** teach our salesmen to sell the product alone. We've found one question of great value in making sales, and that is asking the prospect this: 'Why **don't** you have electric refrigeration to handle your needs?'

"Instead of walking into somebody's store and starting to sales-talk Kelvinator commercial from the first word, we approach the sale from the angle that there must be some reason for the prospect's **not** having electric refrigeration. After all, we're selling Kelvinator, so if we can sell the idea, the excellence of the product we're selling logically follows in closing the deal," Mr. Krich said.

COIN-METERS

And here we discovered the plan by which Krich-Radisco makes 95% of its commercial sales—coin-meters.

"Barney" Krich, facing the fact that most commercial selling today is made on the time payment plan, believes that a customer doesn't "miss" a dollar or two a day collected through a coin-meter as much as he would $30 or $60 a month collected as a complete payment. Besides, the old axiom holds good: "No dollar, no refrigeration."

But the crux of the idea is that the Newark commercial dealer is meeting what he believes the major point of sales resistance today: lack of ready money among smaller-job prospects, most of whom have obsolete or outmoded equipment.

"Most of the people we're selling to today haven't bought up-to-date equipment," says Mr. Krich. "Plenty of restaurants, bakeries, bars, and other places using commercial equipment are trying to get by with old and inefficient boxes and systems. They **want** the newest and best, but they haven't got the ready cash.

"We find that the use of coin-meters overcomes the sales resistance of most of these prospects. If they are operating on small capital and not much ready cash, they like the idea of depositing a daily payment on their new equipment in the meter, and they don't miss it so much as they would forking out the regular monthly payment when due."

REPLACEMENT MARKET

Discussing the present market in the territory covered by Krich-Radisco, Mr. Krich states that Newark and other larger cities nearby are full of stores who "jumped" into business, bought cheap or inadequate equipment to handle immediate needs, and now are faced with expanding business, the first real profits in years, and consequently a need to meet public demands for proper refrigeration. This means new equipment and sales.

In bars, cocktail grills, saloons, and beer stores, this is particularly true, he says. No matter how many

(*Concluded on Page 9, Column 1*)

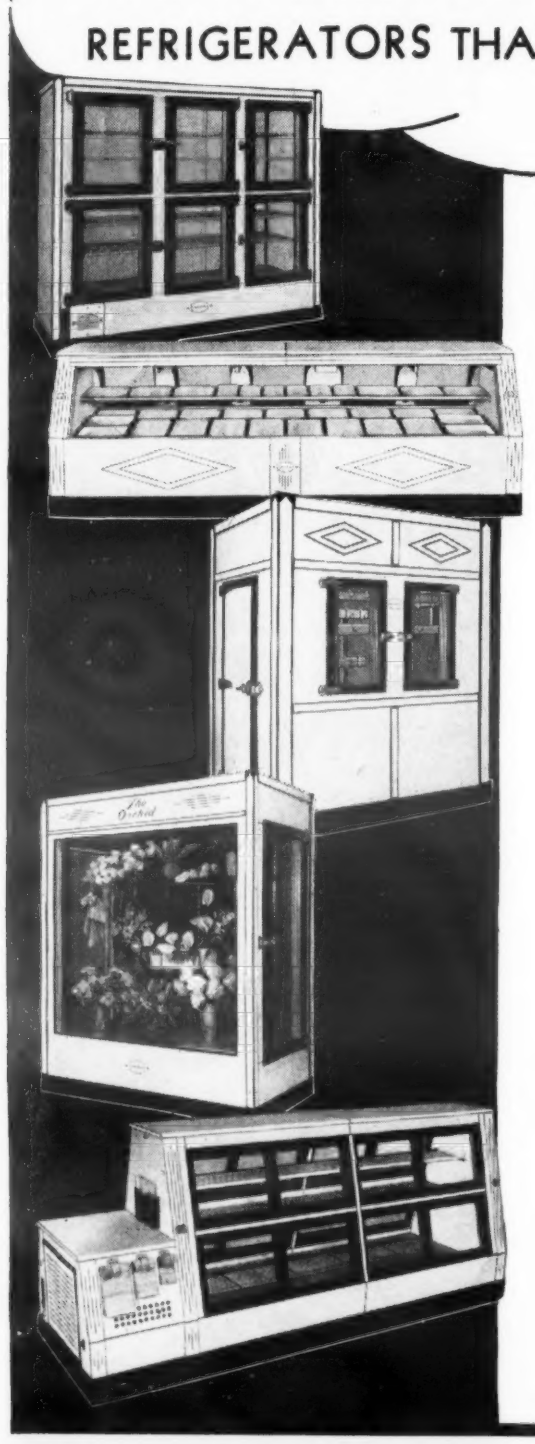
THOUSANDS OF SATISFIED CUSTOMERS MAKE IT

Easier TO SELL **FLOATING AIR**

THE PATENTED AIR CONDITIONED COMMERCIAL

REFRIGERATORS THAT HAVE SALES-MAKING FEATURES

NO COMPETITOR CAN MATCH



NOW, because of the amazing success of Floating Air, six desirable, highly profitable territories are open for the right men or organizations!

Friedrich Floating Air salesmen and distributors now are making more money than they ever thought possible! They find it easier to sell Floating Air because of—

DEPENDABILITY and performance that makes every Floating Air owner a willing demonstrator of its superior merits.

FEATURES that no other refrigerator can match including the patented air conditioning system perfectly uniform temperature throughout the case, "vanishing" doors, 4-glass fronts, copper bottoms, cypress inner construction and many more.

ADVERTISING PROGRAM and selling support that is the strongest in the industry, producing live leads that result in sales.

COMPLETE LINE that makes it possible to sell every type of food handler, including markets, restaurants, florists, hotels, bars, etc. Over a million prospects!

REPUTATION of this 54-year-old, AAA rated firm for producing quality refrigerators and for fair dealings with customers and salesmen.

RESEARCH FACILITIES of one of the countries most modern plants that keeps Floating Air years ahead of competition.

PRICE AND TERMS that are strictly in line with competition.

Only salesmen and distributors of highest character and calibre need apply. Six openings only at this time, which will be filled immediately. Wire or write Department A4 your full qualifications. Your reply kept confidential.

ED FRIEDRICH SALES CORPORATION

SAN ANTONIO, TEXAS

FOR 30 YEARS

STANLEY KNIGHT

SODA FOUNTAINS

Lead again with new

1937 STREAMLINER Model

DISTRIBUTORS WANTED

3430 N. Crawford Ave. Chicago, Ill.

WEATHERHEAD VALVES

- For easy installation on all refrigeration lines.
- Modernly made from extruded brass rod.

GENUINE WEATHERHEAD REFRIGERATION PARTS

WEATHERHEAD • 300 E. 131 ST. • CLEVELAND, OHIO

Demand for Beverages Widened Commercial Market, Krich Finds

(*Concluded from Page 8, Column 5*)

new commercial users of this type go into the liquor and beer business, the market always seems to be greater than the number of outlets, and demands for new equipment correspondingly heavy.

More than this, thinks Mr. Krich, public demand for properly cooled beverages and foods is playing a major role in the picture. Immediately following the return of "three-point-two" several years ago, and later the legalizing of liquor sales, the public was glad to get anything it could drink. Temperature and taste qualities were secondary to an exceedingly thirsty Mr. and Mrs. America.

But now the market is getting "educated," says "Barney" Krich. Liqueurs, brandies, and beer must be kept at just the right temperature, cocktails must be served at the correctly cooled degree, and the old style one-size ice cube is being replaced by sizes demanded by each drink. Old equipment won't handle the situation. New must be bought, and here lies an important commercial market.

Getting back to the subject of his coin-meters, Mr. Krich noted that most competitors in his territory were using them only as a final inducement to make a commercial sale, while Krich-Radisco pushes them as one of its major sales arguments with success.

Further discussing price competition and under-engineering of commercial jobs, he said that it was getting to be a common practice in the northern New Jersey territory to find "jillopy" dealers installing ¾-hp. compressors with a 1-hp. motor and calling the installation a 1-hp. job. "Anything to make a price," declared Mr. Krich.

To combat these practices and a rising consumer and prospect belief that commercial men do not know their business, Krich-Radisco has sent out a letter warning the public of the dangers and false economies of under-engineering and "price" jobs. No mention of the distributorship's line or any "sales talk" is made in the letter.

In his air-conditioning department this spring, Mr. Krich is finding a surprisingly large volume of cash sales. The commercial and air-conditioning engineering staff of Krich-Radisco is headed by William H. Ballman, veteran of several years of air-conditioning work in South America and Cuba and the southern states.

Mr. Ballman's assistants are Richard D. Caldwell, who has spent 27 years in commercial refrigeration and air-conditioning work, and Lester Levenson, who joined the distributorship upon his return from Russia, where he was engaged in assisting the Soviet government in its recently launched air-conditioning program in public works.

Harry H. Weinstein and Aaron Goodman supervise the retail commercial selling crews working out of Newark, and William McKay is in charge of the franchised dealers in other sections of the state. Alfred M. E. Meyerowitz is sales engineer in the air-conditioning division, assisted by Richard K. Shephard.

Puffer-Hubbard Raises Commercial Prices

MINNEAPOLIS—Effective May 1, prices of Puffer-Hubbard commercial refrigeration equipment will be raised approximately 5%, according to A. L. Goetzmann, manager.

Temprite Introduces New Water-Cooling System For Bottling Plants

DETROIT—A new water system for bottling plants, in which the main cooling unit is supplemented by a secondary cooler to insure correct water temperature at both carbonator and bottling machine, has been developed by Temprite Products Corp.

In the Temprite system, water first passes through a main battery of Temprite coolers which reduce its temperature to 40° F. Hourly capacity of these coolers should equal that of the bottling machine so that the flow of water through them remains constant as long as the bottler is in operation.

To offset the cycle of the ordinary carbonator, which takes in water at a fairly rapid rate for a period and then remains idle until this charge of water has been exhausted, a small storage tank is located between the main cooling unit and the carbonator. Capacity of this should equal the capacity of the carbonator itself.

In regular operation the water flows from the Temprite unit into the storage tank at a constant rate, but the water level in the tank rises and falls as the carbonator cycles. No cooling unit is needed in the storage tank, but it should have at least 2 in. of insulation.

RELIEF VALVE USED

In order to permit air to flow into the tank when the water level is lowering and in order to shut off the water when the tank becomes full, the tank is equipped with Temprite Air Relief Valve No. 852. Operation of this entirely automatic valve is comparable to that of a float valve in an open tank. It is fitted with a male end threaded at the top to provide a means of attaching an air cleaner or purifier.

Water line between the main battery of cooling units and the tank is equipped with a hand-operated throttling valve and a thermometer. Purpose of the valve is to permit regulation of water flow to conform to the capacity of the cooling units and demand of the bottling machine.

Agitation of beaters in the carbonator and leakage of heat into it naturally result in raising the temperature of the water from 2° to 8° F., depending upon conditions. This normally causes a fluctuation of water temperature at the bottler.

To offset the temperature rise in the water as it passes through the carbonator, most conventional bottling plant systems deliver water to the carbonator at a temperature lower than 40° F. so that it will reach the bottler at the proper degree.

SECONDARY COOLER

The Temprite system, instead of attempting excessive cooling at any one point, provides for installation of a secondary cooling unit between carbonator and bottler. This unit, although much smaller than the main cooler, re-cools the water as it comes from the carbonator and delivers it to the bottler at the desired temperature. This secondary cooler should be equipped with stainless steel or tinned copper cooling coils to preserve the purity of the carbonated water.

The Temprite cooling system operates as a unit with the bottling machine, and it is necessary to run it only when bottling is being done. It should be turned on approximately 15 minutes before bottling operations are to be started, and the first batch of water should be allowed to run through the entire system in order to chill all parts. Gas may be turned on in the carbonator, and the operation thereafter is entirely automatic.

It is claimed that the Temprite system can operate continuously for 24 hours per day without any shortage of cold water, and that it readily adjusts itself to the shutdowns which occur frequently in the bottling industry. When the bottling machine is stopped to clear breakage or to change to a different type of beverage, the Temprite unit stops simultaneously with the flow of water, because the small storage tank fills and the air relief valve closes. The cooling units are said to maintain their temperatures during the idle period, however, the secondary cooler offsetting the temperature rise in the carbonator.

Restarting of the bottling machine immediately places the cooling system in operation, and properly cooled water is available at the bottling machine instantly, according to Temprite officials.

After a long shutdown, it is necessary to dump the few gallons of water in the system before starting up again. Only refrigeration required during these lengthy shutdowns is to maintain the operating temperature of the few pints of water contained in the Temprite coolers.

Temprite units do not need insulation when operated in ordinary room temperatures, and Temprite's direct heat transfer permits the condensing unit to operate at the highest possible back pressure.

Paris to Install Servel Unit In 'Hall of Waters'

KANSAS CITY, Mo.—Paris Refrigeration Sales, Servel distributor in this territory, has contracted to install a water-cooling system for the Hall of Waters, widely-publicized spa located at Excelsior Springs, Mo., northeast of this city.

A 7½-ton Servel model WAO-750 machine unit has been purchased for the project.

Sale was made by G. N. Paris, head of the distributing company, who was successful bidder on specifications issued by Keene & Simpson, architects here.

Cuba Installs Refrigeration In Coronation Battleship

HAVANA—The Cuban government has installed a modern refrigeration system in the battleship *Cuba* for the health protection of army and navy dignitaries who are sailing on it to the coronation of George VI in London, May 12.

In line with the general renovation of the 15-year-old battleship, the navy department installed a one-ton Carrier refrigeration system to provide low temperatures and controlled humidity in the food storage rooms. A large quantity of perishable foods has been stored in the *Cuba* for the 100 officers and men who will make the trip.

Baker Develops Equipment For Quick-Freezing of Northwest's Produce

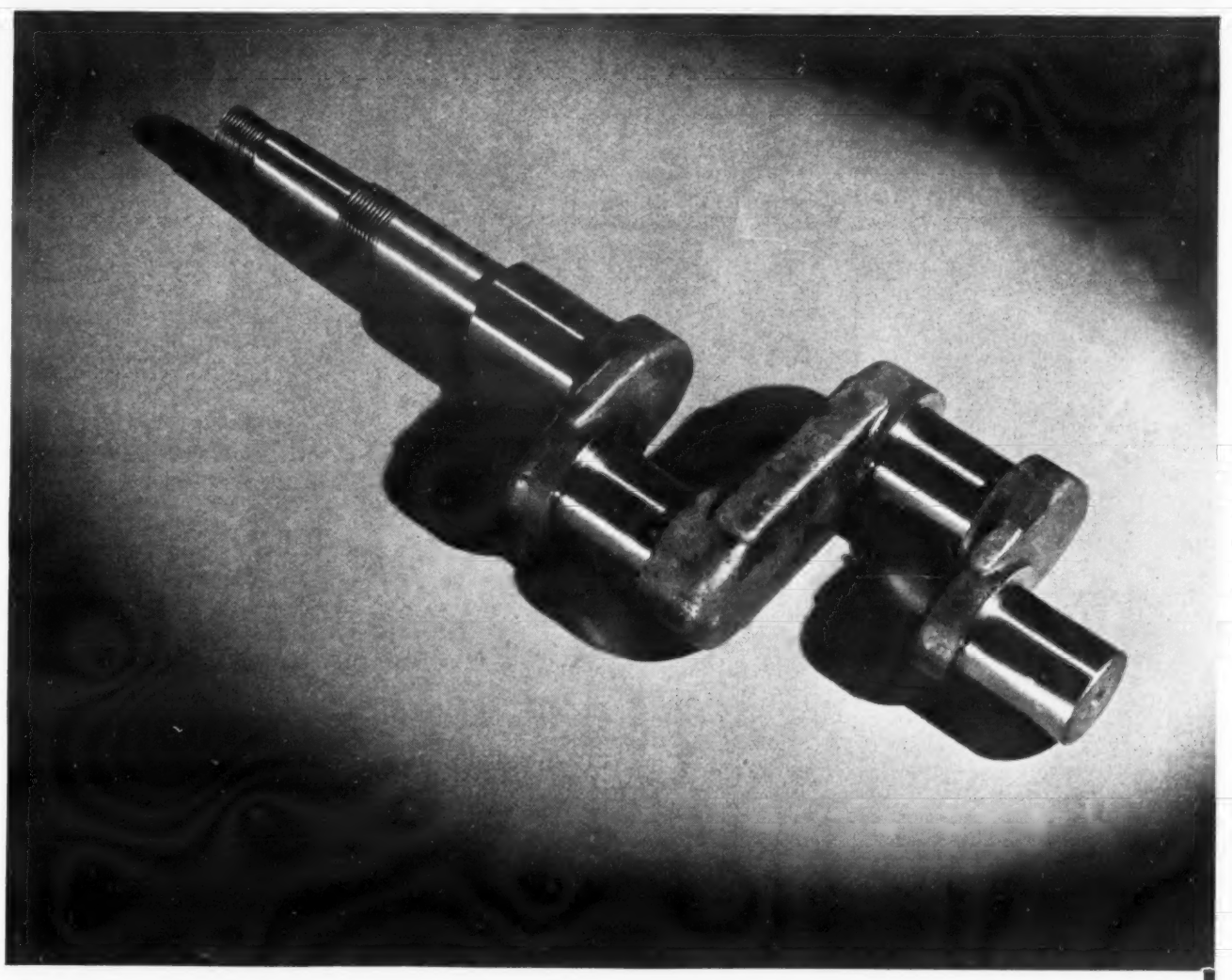
SEATTLE—Profitable marketing of surplus berries, peas, and other produce of the Northwest will be made possible through use of quick-freezing equipment recently developed by Northwest Baker Ice Machine Co., claims F. W. Knowles, Northwest manager.

The new equipment, Mr. Knowles states, will freeze such produce as soon as it is harvested and keep it in perfect condition indefinitely.

Such a freezing system should prove helpful to western fruit and vegetable growers who for the past few years have been forced to sell their products at less than production cost because of the necessity of marketing them during or immediately following the harvest season, Mr. Knowles believes. The new process would enable them to store their produce until they are able to sell on a profitable market.

Buckhannon Installs Servel Unit for Woolworth

BUCKHANNON, W. Va.—A Servel-powered ice cream dispensing cabinet has been purchased by the Woolworth 5-and-10 cents store here, according to J. W. Bessey, head of Buckhannon Refrigeration Engineering & Sales.



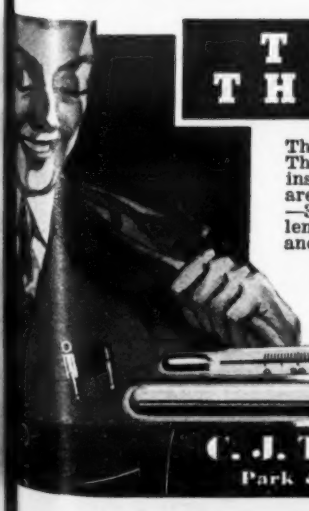
This Is the Crank Shaft

The crank shaft is the secret of quiet operation. The microscopic attention given this vital part by Mills craftsmen insures the all necessary balance which eliminates vibration. This mechanical masterpiece fully expresses what we mean by "Modernized Refrigeration."

Mills Condensing Units

Mills Novelty Company

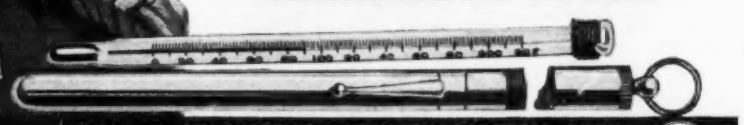
4100 Fullerton Avenue, Chicago, Ill.



TAG POCKET THERMOMETERS

The practical design and extreme precision of TAG Pocket Thermometers are reflected in the great number of these instruments which are carried by alert servicemen. They are available in mercury or spirit-filled, with ranges of —30 to +120°F., +30 to +120°F. or 0 to 220°F., 6" in length. Send for prices and a copy of the TAG Control and Test Equipment Catalog No. 1136-25.

ASK YOUR JOBBER ABOUT TAG POCKET THERMOMETERS AND CONTROLS.



C. J. TAGLIABUE MFG. CO.

Park & Nostrand Ave's., Brooklyn, N. Y.

AROUND THE WORLD
WITH GEORGE F. TAUBENECK

From Germany to England is but a sleeper jump by boat, the reading time of a couple of magazine stories by airplane. Both are busy, both have the appearance of prosperity. Yet the differences are as daylight in California and night in the bottom shaft of an Illinois coal mine.

The editor's World Series travelog discusses Germany's amazing transformation from crippled lamb to roaring lion, takes a last look at Berlin, Bremen, and Cologne, and then is off to look at the refrigeration situation in England—which buys more refrigeration and air-conditioning equipment annually than any other country in the world outside of the United States of America.

'Out of My Way'

Germany is a nation going somewhere. You feel a tense, electric atmosphere all about you in Berlin. You sense that here is history in the making, that here is the incubus for another attempt at world domination, that here—with the possible exception of Japan—is the most militantly ambitious, efficiently regimented race of people on the face of the globe.

For sheer artistry and wizardry of performance, almost nothing in the history of Christian Era diplomacy can match Germany's astounding recovery. In 17 years she has advanced from a beaten, broken, helpless, impoverished country to a reborn nation which has given all Europe a case of the jitters.

Take the case of reparations. By successive stages of shrewed bargaining, plus a drastic deflation, plus a play upon the gullibility of foreign investors, Germany has actually made a profit on reparations.

Originally she was supposed to pay the Allies the unimagineable sum of 269 billions of dollars. There isn't that much actual money in the world. Clemenceau and Lloyd George, instigators of the geography-defying Treaty of Versailles, thought that payment of that sum would keep Germany poverty-stricken for at least a century.

But lo! Germany pled, and proved, inability to pay. The sum was scaled down again and again. She borrowed and reborrowed abroad, then played one set of borrowers off against another. She devalued the mark so drastically that the monetary situation became almost comic for a time.

Eventually, it developed that foreign investors had not only paid off Germany's peace-treaty-imposed debt, but had enabled her to rebuild her merchant marine, modernize her cities, bring her factories so completely up-to-date that her production efficiency was without peer in Europe, and to build what may be the most formidable military machine in the world.

Most of us are inclined to think of Hitler as the man responsible for this amazing recovery. Hitler, it is true, symbolizes the desperate spirit of the people. Continually playing the everything-to-win-and-nothing-to - lose game, his very audacity has kept his diplomatic opponents backing up all over the map.

But Hitler, the great orator who was placed on the throne by the industrialists, and whose personal popularity rivals that of Roosevelt in America, really must take a back seat when it comes to receiving the laurel wreaths for the rehabilitation of Germany.

Two men who deserve vastly more credit are Stresemann, who engineered the rout of reparations, and Dr. Schacht, the enormously clever minister of finance who lifted Germany's industry by its bootstraps.

All through Europe I found myself drawing blanks on calls, because the Germans had ousted the Americans from the refrigeration picture.

Yes, they used to sell Kelvinator or Frigidaire, but not any more. Now they import AEG or Bosch, or some other German refrigeration product. This same supplanting of American and English commercial outlets has gone on in almost every line of industrial endeavor, and most of my informers gave Dr. Schacht the palm for arranging it.

Here was the Schacht formula: During the depths of the depression, every country in Europe had a surplus of some product or other. Schacht would buy it up—with credit, not cash.

Schacht would buy up—at bargain prices—a surplusage of food or raw materials for Germany; the selling nation would receive a credit in a German bank. Germany had no cash, so the other nation would have to take pay in German goods—billed at a nice profit for Germany.

To get paid for its shoes, Czechoslovakia had to buy German machinery. To get paid for its surplus wheat crop, which Germany had so kindly taken off its hands, Hungary had to purchase almost all its fabricated imports from Germany. And so on it went.

By diabolically ingenious manipulation of currency and credit Germany, with a smaller cash reserve than the private fortunes of any number of individual Americans, has regained its commercial dominance of the European market—especially in the Baltic and Balkan states.

It was all done with mirrors and with bluff—exactly as Germany's return to political power was accomplished.

* * *

Taken for a Ride

In addition to the remarkable cleverness of Germany's diplomats, there was the equally remarkable willingness of the German people to work—to work at anything, to work hard at everything, and to accept trifling pay in recompense.

It all fitted in together.

Statesmen bartered. People worked. And by shrewd finagling of money and credit—other people's money and credit—the rest of the world was outsmarted. And that goes double for the United States of America. We took the biggest ride of all.

Attempting to analyze German money is like trying to learn the Chinese "alphabet." With this difference: the discouragingly complicated Chinese characters have remained static throughout ages; whereas a new German monetary rule is likely to pop up any day.

It is possible to furnish a bit of basic information, however; and nothing is so important for the hopeful exporter to Germany to learn.

* * *

German Money

The par value of the reichsmark, German monetary unit, approximates $0.4043. The unit itself is divided into 100 reichspfennige.

Silver coins, which range from one to five reichsmarks, are legal tender for payments not exceeding 20 reichsmarks. The limit for which nickel and copper coins are legal tender is five reichsmarks. Gold coins, now practically out of circulation, are legal tender without limitation.

In 1935, a decree was issued to the effect that all imported foreign notes must be immediately surrendered to the Reichsbank, Germany's central bank—which is purported to be independent of the Reich government, but is in reality under the control of the Fuehrer, since he has the authority to nominate and recall the Reichsbank President and the members of the board of directors.

The President of the Reichsbank is also Acting Minister of Economics for the government.

Except for the Deutsche Rentenbank in Berlin, the Reichsbank is the sole note-issuing authority in Germany. There are no government notes issued. However, the notes of the Rentenbank are not legal tender.

Reichsbank notes must have a coverage of at least 40% of their nominal value in the form of gold and foreign exchange, the former comprising three-fourths of the amount. Silver cannot be used as coverage on notes.

Since Feb. 4, 1935, the purchase, importation, and exportation of gold and silver has been allowed only with the permission of the Foreign Exchange Board.

Only the Reichsbank can put silver coins into circulation.

* * *

German People

As a race, one finds it difficult to like the Germans, much as one may admire the results they get. But as individuals, they have many loveable traits.

First of all, their honesty. Example: A sum of money—Swedish and English currency—disappeared from my hotel room. The hotel (The Esplanade) promptly made it good, and without questions. I shudder to think of the difficulties I would have been forced to go through with to recover it in almost any other country on the Continent.

Their intellectual honesty is as striking as their honesty with regard to money (again, I am speaking of individuals—not the race, or the nation). Don't try to kid a German, or expect him to josh you. If they tell you something, it's likely to be so.

Music, of course, is their national passion. They are not satisfied merely with listening to excellent music—which is available in abundance—they play it, or sing it, themselves. In almost every household is at least one creditable musician. Many German business executives are accomplished artists upon some instrument, especially the piano.

They love to work as much as they love their music and their beer. To them, work is their life.

Learning is much admired; education greatly prized.

Liberty and independence seem to have no meaning to them. Discipline is the word for Germany. Childhood training is rigid and severe; these habits of obedience to superior force remain with them throughout life.

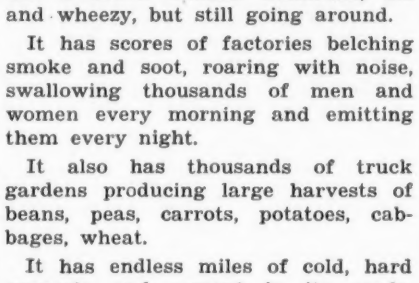
They are not an especially handsome people. Men are sturdy, powerful, substantial. Women are strong, occasionally beautiful, seldom pretty. Stylishness of dress is not apparent.

Germans are eminently a race of serious people.

Berlin Street Scene

From the Diesel truck at the left to the Teutonic face at the right, all elements of this picture compose a typical Berlin street scene.

Looka Here!



Editor Taubeneck was pleased no end to find a Tauben street in the heart of Berlin's business district, crossing Friedrichstrasse.

Double Life

Recognized as one of the most modern cities in the world, Berlin is oddly enough a combination of the urban and the rural.

It has a population of 4,220,000—definitely urban. But it also has among its inhabitants a staggeringly large array of farm animals: 700,000 chickens; 180,000 rabbits; 30,000 pigs; 20,000 cows; 10,000 goats; untold swarms of bees—definitely rural.

It has immense, though squat, buildings of brick and stone. It also has a dozen wooden windmills, old and wheezy, but still going around.

It has scores of factories belching smoke and soot, roaring with noise, swallowing thousands of men and women every morning and emitting them every night.

It also has thousands of truck gardens producing large harvests of beans, peas, carrots, potatoes, cabbages, wheat.

It has endless miles of cold, hard concrete and cement in its roads, sidewalks, gutters, curbs. It also has miles of meandering rivers and canals.

It has countless thousands of drab, lifeless brick houses. It also has innumerable glorious trees—birch, chestnut, elm, linden, maple, oak.

It has hundreds of straight, plain, meaningless streets and alleys. It also has many lovely parks and gardens with shaded winding lanes coursing through the inevitable trees and well-groomed bushes.

This, then, is Berlin—the duplicity. It leads a double life—and a shady one, at that.

* * *

Gardeners All

The little truck gardens, known collectively as the "Schreber Gartens" (in honor of a physician famous in the 1860's, when the first such "citified farm" was developed), provide an escape for thousands of Berliners from their mechanized, goose-stepping world.

Cooped up as they are almost every day in their offices, factories, apartments, and flats, these city dwellers escape to their gardens during the week-ends and on fine summer evenings. There they can get back to the soil and down to earth.

They lease these plots of land at nominal rents from either the State or the city, depending upon which holds the title to it.

Others of Berlin's masses who enjoy the outdoor life—and no race likes it more than the Germans—flock to the many boat clubs and bathing clubs on the outskirts of the city where they may swim in pools or in the rivers.

Public bathing beaches are few, because suitable sites for them are limited. Probably the most popular beach is the Wannsee, a few miles southwest of the city on the Havel River, noted for its warm sands, its clean dining rooms, and its big dance hall.

Though Berlin's summer season is short, the days are quite long. Most of the time there are 17 hours of daylight in every 24.

Berliners love to dine in outdoor cafes and restaurants, ranging in size, beauty, and price from the informal "two-by-fours" to the classy Kroll in the Tiergarten.

Overlooking the Spree, the Kroll is undoubtedly the top in fashionable garden restaurants. Here gather the wealthier business men, the ladies of society, the military officers, and others of their ilk.

Seated around neat white tables, they discuss various unbanned topics as they ladle away excellent and costly dinners, not unmindful of the music emanating from the semi-circular cupola behind them.

Some of the plainer outdoor cafes frequented by the "even-as-you-and-I" folk are managed by smart business men, who provide cups and water so that their customers may brew their own coffee.

With such services to attract them, German middle-class families of the picnic-loving variety go to these cafes for their lunches. The families are large, and their collective appetites are proportionately huge. Which means that they will order plenty of food—sometimes! Often they bring their own food in baskets, buying only beer or chocolate from the cafe.

Smallest, but by no means least important, of the outdoor eating places are the sidewalk cafes, particularly numerous along the Kurfursten-Damm. The latter is Berlin's favorite promenade, and, like New York's Fifth Avenue, is the scene of the annual Easter Parade.

After dark, Berlin brightens up with a dazzling array of electric lights. All kinds of signs flash into view, red neons predominating. The distinction of being Berlin's "gay white way" is contested between the Kurfursten-Damm and Friedrich Strasse, for each is ablaze with brilliantly glowing entrances to cafes, restaurants, cabarets, night clubs, dance halls. Either can rival Piccadilly Circus or Broadway for profusion and intensity of candle power.

* * *

Haus Vaterland

One of the best night spots for visitors to Berlin to go "bummeln" is the big, modernistic Haus Vaterland, which has about 10 different dancing-dining rooms, each decorated to represent some particular scenic spot—such as a district in the Alps, or perhaps the region around Fujiyama in Japan.

In addition, there is a huge music hall and motion picture theater. I saw an excellent show there, which featured a German film starring Anny Ondra (Max Schmeling's wife—cute as the dickens), and nine good vaudeville turns.

One of the comedians got a big laugh every time he said the word, "Roosevelt." What he said about Herr Roosevelt was lost in a jungle of gutteral German verbiage, which I do not understand.

American films are shown there, and American vaudeville acts are in demand.

Many of the night-lifers in Berlin are students from the universities. These include a large proportion of foreign graduate students, many of whom come from America.

* * *

Water & Air

Berlin's water traffic is much greater than its land traffic. The city ranks second in the country in the matter of shipping tonnage for inland ports, its annual volume being about 6,500,000 tons, of which 5,000,000 are incoming.

With their numerous twistings and turnings, their branches, and their linking canals, the rivers Spree and Havel form an intricate network of waterways spreading over a greater part of the city.

Most of the traffic consists of barges and long, though not very large, freighters which could be described as miniatures of the Great Lakes boats. Cargoes usually consist of building supplies, coal, foodstuffs, fruit, oil, and steel.

Huge warehouses line the rivers and canals, and miles upon miles of wharves are constantly bumbling with activity as the boats are emptied and loaded.

By the canals joining Berlin's waterways with the rivers Oder and Elbe, the capital city has access to the open sea.

Numerous waterways link the capital with all parts of Germany, the North Sea, and the Baltic. Vessels of 1,000 tons can navigate the Spree to the city docks, and larger ones may reach any of the nine transhipment harbors which are connected to Berlin by rail.

Tempelhof aerodrome, Berlin's Newark, is within easy reach of the heart of the city. Fronted by a concrete ramp shaped like a champagne glass, Tempelhof is Germany's largest airport, and is the base of several lines connecting Berlin with all parts of the continent and England. Zeppelinhafen at Staaken, near Spandau, is a vast dome for test flights.

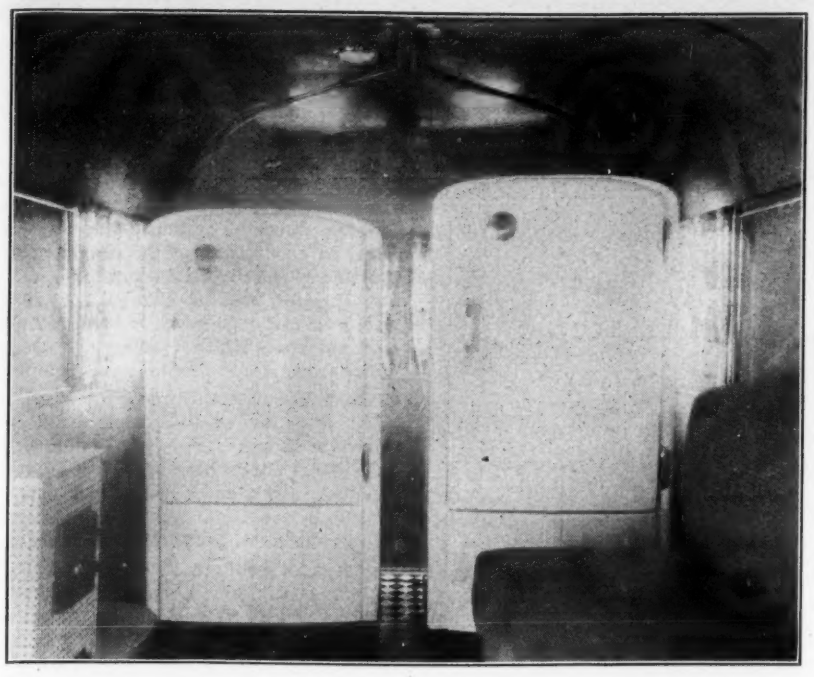
* * *

German Youth

There are some 15 universities in the city, and they include colleges and technical schools. The principal one is Berlin University, also known

(*Continued on Page 12, Column 1*)

Simplifying Dealer Contacts



This "traveling sample room" has proved useful to District Manager L. R. Mahon in demonstrating the 1937 Canadian Universal Cooler in his southern Ontario territory.

* * *

Norge Promotion Using Hollywood Movie

DETROIT—As its 1937 experiment in "painless selling," Norge division of Borg-Warner Corp. has filmed "The Unwritten Story," a feature-length Hollywood movie, intended for use as a mass selling tool for cooking schools, showrooms, and theaters.

Basic plot of the picture concerns the difficulties met by an advertising department in promoting a product so good that, were the advertising writers to tell the whole truth, the public would think them exaggerating beyond all reason and, consequently, would buy elsewhere.

While the advertising department is busy trimming its selling campaign to the point of believability, a young college graduate is making good with the help of a girl—both of whom are working for Norge at the time.

James A. Sterling, Norge advertising and sales promotion manager, author of "The Freedom of the Shes," "The Restless Urge," "The Harvest Year," and other scenarios, wrote the story. It was filmed by Jam Handy Picture Service, Inc., in Hollywood.

A cast of 175, headed by Ann Evers, featured player, and Russell Gleason, son of Jimmie and Lucile Gleason, is used. Featured Player Arthur Loft plays the part of the Norge advertising manager, and Marion Schilling, Baby Wampus star of a few years ago, is the Norge home economist.

Others in the supporting cast—several of them once stars—are: Francis X. Bushman, Bryant Washburn, Snub Pollard, Kate Price, Gene Austin, Harry Semils, Jason Robards, and Robert Graves.

Walter Rose, who was assigned by the Leo J. Meyberg Co., San Francisco Norge distributor, to supervise merchandise used in the picture, was given a part when it was found that he had acting experience.

Cullen Landis, former hero of many "silent" westerns, directed. "The Unwritten Story" is ostensibly the story of Lester Bates, a young college graduate, and his difficulties in getting a job.

Very sure of a brilliant future, Bates is found at a fraternity dance the night previous to graduation with a co-ed who has obtained a home economics job with Norge. Disdainful of such employment, he is certain that big executives will come begging for his services. He waits six months.

A little anxious at last, and with his mother prodding him to action, he goes out to look for a job; finally finds one with a Norge advertising department as a $15 a week ad clipper. The co-ed gets her chance to patronize back.

Deciding to learn the business, Bates tries writing copy, studies Norge products, climbs from job to job through the advertising department, and has many humorous mishaps. But, with the help of Nora Burke, who stays at his mother's deluxe boarding house and is secretary to the Norge advertising manager, he makes progress.

The picture audience, meanwhile, is taken behind the scenes, shown the preparation of advertisements in broadcasting, art, and photography studios, and listens in on some executive meetings.

The completed film is now available, both on 35 mm. and 16 mm., for distributor and dealer use.

Trailer Eliminates Need For Hotel Displays

BRANTFORD, Ont., Canada—Universal Cooler Company of Canada, Ltd. has found a "traveling sample room" a time and trouble saver in contacting prospective dealers in the Southern Ontario territory, reports Sales Manager P. A. Manross.

The "sample room," an 18-foot trailer, is used by L. R. Mahon, district manager of Southern Ontario, territory and is equipped with the complete line of five domestic refrigerator models.

Use of the trailer has simplified the problem of contacting dealers, Mr. Manross says, by eliminating the necessity of setting up sample rooms, shipping in crated refrigerators, and arranging them for dealer inspection and interviewing.

Because of the interest it excites, it has also been a means of getting retail salesmen employed by the prospective dealer to look at the Universal Cooler models, and learn their qualities at first hand, he declares.

Tidmarsh Gets 4,000 Prospects From Home Show Display

PHOENIX, Ariz.—Names of 4,000 prospects and the appliances they already owned were obtained here by Tidmarsh Engineering Co., Norge distributor, at the *Arizona Republic* and *Phoenix Gazette* Better Homes Show.

Mrs. Florence Austin Chase, Hollywood home economist, managed the show, and Miss Elizabeth Brewer, Tidmarsh home economist, had charge of the company's booth.

Westinghouse 'Tuff Guys' Club Formed

MANSFIELD—When 70% of the top retail range salesmen who were contacted in a coast-to-coast investigation made by Westinghouse Electric & Mfg. Co. agreed that cooking ability helps selling, the idea for forming the Westinghouse Range "Tuff Guys" Club was born.

A "tuff guy," according to the new organization's definition, is one who can cook and brags about it—he's the opposite of a sissy, who either can't cook or won't admit that he can.

To earn a "Tuff Guy's" certificate and club membership card, a salesman must pass a seven-point cooking test by preparing a number of dishes cooked by different methods to illustrate the selling points of a 1937 Westinghouse range. The final step in the test is the preparation of a complete meal.

Membership in the club already totals 185, according to Reese Mills, manager of the Westinghouse range and water-heater department.

Headed by two honorary members, George Rector, internationally known chef, and Lowell Thomas, radio commentator, the list of the first 32 men to qualify as members of the "Tuff Guy" club includes:

J. D. Kelly, V. E. Vining, J. A. Crowley, and H. R. Lewis, of Mansfield; C. O. Warren, N. E. Harvey, C. E. Hoopper, of Columbus, S. C.; E. C. Downing, Zeb Curtis, Jr., of Greenville, S. C.; E. P. Larson, E. K. Solomon, G. W. Knight, of Charlotte, N. C.

J. M. Howle, L. W. Hays, W. L. Southwell, of Raleigh, N. C.; M. O. Mosteller, A. A. Gould, Geo. Washington, F. S. Adkins, J. C. Fleming, of Atlanta; D. E. Brunskill and R. H. Lide, Jacksonville, Fla.; D. N. Asbury, O. C. Rhodes, C. C. Logan, W. B. Wiley, of Tampa, Fla.; Edgar Jones and George Wygant, Miami, Fla.; L. W. MacQuarrie, Boston; and T. W. Martin, St. Louis.

In connection with the awarding of diplomas to eight of its employes who had qualified for membership in the "Tuff Guy" club, the Pemigewasset Electric Co., Plymouth, N. H. held a "gay nineties" party in its showrooms.

Attired in costumes of half a century ago, the following men staged a cookery demonstration and received club diplomas:

Douglas Lenfesty, Westinghouse New England sales promotion manager; William L. Rowell, dealer supervisor of south Maine and New Hampshire; Henry Shea of the Westinghouse sales force in Concord; Frank Davis, sales promotion, Boston; A. T. Grimm, merchandise superintendent for Maine and New Hampshire; Leon M. Huntress, manager; and Norman Wade and Robert Bacon, of the Plymouth sales staff.

Store Features 'Specials' on Window Blackboard

KANSAS CITY—To build up an active prospect list from those who pass its store, Elder-Carey Electric Co. has placed in its show window a 3 by 4-ft. blackboard, featuring daily "specials" in used refrigerators and washers.

"People coming in to inquire about these featured articles," says Owner W. D. Elder, "are in the market for electrical equipment, ready to buy."

Birmingham 'Carnival Week' May 9-14

BIRMINGHAM, Ala. — "Electrical Carnival Week," co-sponsored by Alabama Power Co., Birmingham Electric Co., the *Birmingham Post*, and cooperating dealers, is scheduled here for the week of May 9, and will culminate in a home show to be held in the municipal auditorium May 12 to 14.

Dealers plan to display appliances in front of their respective stores during "carnival week," and store traffic will be stimulated by offering free tickets to the home show. Admission to the show, without ticket, will be 10 cents.

Several thousand dollars worth of prizes, including an automobile, 15 refrigerators, 10 ranges, five washing machines, three ironers, and a dozen radios, will be awarded to those attending the show.

Tickets distributed by dealers will entitle show visitors to participate in the prize drawings.

Explaining that business in Birmingham is definitely on the upgrade, an official of Birmingham Electric Co. estimated that 400,000 persons will attend the show.

Electrolux to Extend Use Of Trailer Sales Coach

NEW ORLEANS—Effectiveness of the new trailer-type Electrolux demonstration coach recently was discussed by Robert Hallock, Servel's director of sales research, before the sales force of A. Baldwin & Co., Inc., local distributor.

The sound-equipped trailer, according to Mr. Hallock, has proved its worth in New Orleans, and will be employed in other cities throughout the country.

CONDENSERS
DOMESTIC EVAPORATORS
COMMERCIAL EVAPORATORS
AIR CONDITIONING SURFACE

McCORD
REFRIGERATION AND AIR CONDITIONING Products

BLAST HEATING SURFACE
COMFORT COOLERS
MARKET COOLERS
UNIT HEATERS

CATALOGUES ON REQUEST

McCORD RADIATOR & MFG. CO.
DETROIT, MICHIGAN

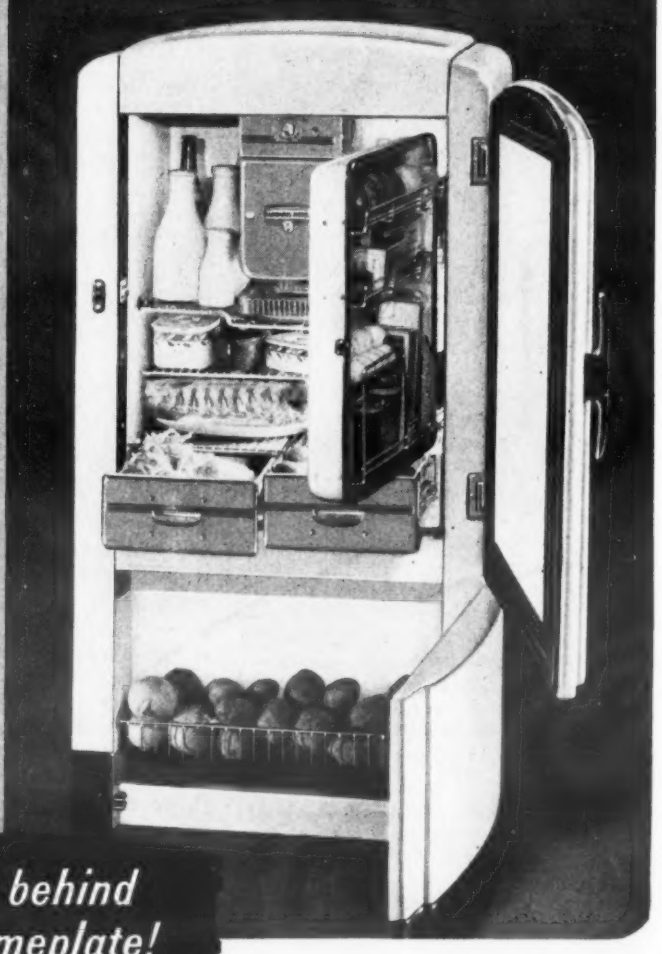
Every A-P Thermostatic Expansion Valve is triple-tested as a complete unit before it can find its way into service.

AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

FAIRBANKS-MORSE
Conservador REFRIGERATOR

It sells because it's Different!

...AND BECAUSE THE CONSERVADOR IS PATENTED!



Look behind the nameplate!

OPEN the door of the new Fairbanks-Morse CONSERVADOR Refrigerator. Instantly, a sale begins. The prospect sees the CONSERVADOR—an improvement she can see in no other refrigerator.

She sees thrift that she can *understand*. She sees finger tip convenience. She sees no back shelf waste. She sees all these advantages before you say a word.

Women like the CONSERVADOR. They WANT IT. And because no other refrigerator has it, competition can't switch them.

Every Worth-while Feature

The Fairbanks-Morse refrigerator has economy without sacrificing any ability to protect food during a heat wave. It has the *first* twin-sealed door—simplified temperature control—automatic overload protector that resets itself. It has a low cost of operation you can prove, not in kilowatts, not by comparison, *but in pennies* with the Penny Meter display.

In fact, the Fairbanks-Morse has EVERY worth-while feature found in other refrigerators—PLUS the matchless CONSERVADOR.

If you know the profit-making advantages of selling outstanding improvement . . . if you want to deal with an organization which has been satisfying customers for more than a century, get the Fairbanks-Morse proposition. The Fairbanks-Morse Appliance Franchise can include any one or all of the following products: Refrigerators, Radios, Home Laundry Equipment. Write Fairbanks, Morse & Co., Home Appliance Division, 2060 Northwestern Ave., Indianapolis, Indiana and ask for your distributor's name.

Other FAIRBANKS-MORSE *Products*
WASHERS • IRONERS • RADIOS • AUTOMATIC COAL BURNERS
AIR CONDITIONING EQUIPMENT

(*Continued from Page 10, Column 5*)

as Frederick William University, facing the Opera House on the Linden. It is housed in a former royal palace of the Hohenzollerns.

Formal education in Berlin is provided also in the more than 500 elementary schools, the 150 or so secondaries, and the handful of special institutes.

Berlin's youth is remarkably healthy and sound-bodied. Boys, girls, youths, and young women are kept physically fit by frequent exercises and drills.

Young men between 17 and 25 years of age must spend half a year in one of the 1,200 service camps established throughout the country, which roughly correspond to our C.C.C. camps.

Squads of boys are sent out from these camps to construct irrigation systems, and reclaim marshlands. Plenty of ditch-digging, dirt-piling, and muck-hauling is involved, and most of the youths evidently enjoy it and benefit from it.

Young women of the same age also perform services for the government, although their work is not compulsory like the boys'. Many of them volunteer, however. They serve as farm hands, housekeepers, office girls, and even factory workers for short terms.

* * *

Olympia Stadium

One of the major accomplishments of the Hitler-sponsored "youth movement" is the Reich Sports Grounds now practically completed on the site of the old Grunewald Racecourse. These were inaugurated with the eleventh Olympaid, Aug. 1-16, last year.

Olympia Stadium, which seats 100,000 spectators, is the centerpiece of several stadia, including those for swimming, hockey, riding and driving, and other outdoor sports. Connected with the sports grounds and situated at various points about its beautifully landscaped wooded areas are various "academies" of physical training—all of modernistic construction.

Hoppegarten, Mariendorf, and Ruhleben are the principal race tracks near Berlin. All racing meetings are controlled by the Union Club.

Avus, in the Grunewald, is Germany's Minneapolis. Here we saw a 12-mile track with sideline room for hundreds of thousands of spectators. All, of course, cannot see the finish, but there should be little crowding along a 24-mile sideline.

* * *

Slum Clearance

Slums have practically vanished from Berlin. They were torn down and cleared out several years ago, and have been replaced by up-to-date apartment blocks and model settlements.

Most of the new, modern tenements have been constructed by both city and State, although a few have been fostered by private companies.

Of the latter type, the shining example is the Siemens Stadt, a composite ideal community built by Siemens electrical manufacturing company, the refrigeration activities of which were covered previously.

Near to the factory, the settlement contains modern apartments and flats, efficient schools, hospitals, churches, theaters, recreation fields, community halls, and the like. Most of the 120,000 employes of the company live there.

Allgemeine Elektricitats-Gesellschaft has fostered a similar settlement for its 50,000 workers.

* * *

Cigar Parking

Two special services worth comment are provided by some of the department stores. Just inside the entrances they place brass racks on the wall. These are packing places for cigars, the idea being that every lighted cigar must be placed in one of the slots in the rack before its owner is permitted inside the store.

The other service has to do with pet dogs. Women shoppers who bring their dachsunds along with them to the store may leave their precious pooches in the pup-parking department. Each animal is assigned a couch and a post, to which it is tethered.

* * *

Bremen

Largest German transoceanic passenger port, Bremen is a city of about 375,000 on the river Weser, 75 miles inland from the North Sea. In connection with Bremerhaven, its sister port on the coast, Bremen is the home port of a world-wide passenger service and several express lines. The largest vessels dock there because the Weser has been dredged for the deepest draft traffic.

Such liners as the "Bremen," "Europa," and "Columbus," moor directly on the river embankment, which has become independent of tides since the 3,280-ft. Columbus Quay, offering a water depth of 40 ft. at low tide, was built several years ago.

Passengers disembarking here may enter continental express trains at Columbus Station nearby for all parts of Europe, or board a plane at the city airport a mile distant.

Besides her position as premier German passenger port, Bremen is the deepest inland ocean port with all accommodations for large-scale cargo handling, the largest German railway port, and the largest cotton market on the continent.

Principal import commodities handled through Bremen and Bremerhaven are cotton, wool, grain, coffee, tobacco, fruits, wine, timber, jute, rice, and oils.

Because of its inland postion, plus the preferential tariffs of the German State Railway Co. for North Sea ports, transport and seabound freight through Bremen is cheaper than through most other German seaports.

Bremen docks are intersected by close networks of railroad tracks, aggregating 180 miles on a quay length of 27. In the Free Port district, there are more than 10 miles of siding to one of waterfront.

Mazes of quays, cranes, sheds, derricks, and warehouses crowd the waterfront; "donkey" engines hurry back and forth shuttling cargoes from shipboard to freight cars, and vice versa; ocean giants are nudged into sheltered basins through giant locks by an armada of tugs; whistles and horns from harbor traffic make one think of New York on a busy day.

Completion of the titanic North Lock, second largest in the world, and enlargement of one of the dry docks to a length of 1,060 ft. provides basin space for ships the size of the "Queen Mary" and "Normandie." Today 120 steamship lines dock their vessels at Bremen or at Bremerhaven.

Cargoes stored for commercial disposal have the choice of 42 state-owned sheds, with a floor space of 437,000 sq. yards, and for warehousing a floor space of 479,000 sq. yards, also state property, besides scores of private warehouses and storage sheds.

Harbor officials say that about 6,000 steam and motor ships enter Bremen's roads each year, with an approximate tonnage of 7,000,000 tons, making it one of the greatest ports in Europe.

Besides the harbor district, Bremen offers to the sightseer dockside fisheries, the Deep Sea Fishing Research Institute, Marine Aquarium, the Morgenstern Museum of marine life with several prehistoric finds, the Museum of Natural History, Municipal Theater, Municipal Hall, Hall of Art, and the Lower Saxon peasants' houses in the village of Speckenbuttel.

* * *

Koln on the Rhine

Just outside the main railway station of Cologne, or Koln, as the Germans spell it (and who has a better right to spell it that way?) stands the great Cathedral, Germany's finest church. This multi-tiered edifice rises 515 feet into the air, with twin sentinel spires.

As legend has it, the architect who designed the Cathedral acquired its plans by tricking the Devil. In retaliation Satan prophesied that it would never be completed, and strangely enough, the prophecy held true for several centuries.

It was not until 1880 that money was raised for its completion.

The interior of this huge Cathedral is even more inspiring than the exterior. Although the church itself is not half so tall as the spires, it does give an impression of tremendous height. The ceiling seems to hang from the heavens. The colored windows, the saints and the pillars lend an air of peace and contentment.

Most prized possession of the Cathedral is the reliquary which contains the purported skulls of the Three Wise Men of Bethlehem. Made of pure gold, this reliquary is shaped like a miniature temple, studded with jewels and bearing figures of the three Magi—Gaspar, Melchior, and Balthasar.

As the story goes, these relics were taken from Palestine to Instanbul by Empress Helena, and then were later removed to Milano. Frederick Barbarossa found them there and presented them to the Archbishop of Koln.

Looking down from the south tower of the Cathedral, the Rhine and plain stretch below, broken only by the wooded peaks of the Seven Mountains.

The Rhine is navigable continuously from Basel to its mouth in the North Sea opposite the Thames estuary. Ocean-going ships sail upstream as far as Cologne.

From Basel to Cologne there is a grand railroad trip, which I took, during the length of which the tracks are practically washed by the Rhine. Turreted old castles, hills terraced for planting, ancient steamboats, and busy factories pass by as you gaze out of the train window; and you get the impression that no matter what happens, Germany is basically a substantial nation.

Just before I arrived, this area, which was demilitarized following the World War, was reoccupied by steel-helmeted sentry. They were very much in evidence.

The name "Koln" dates back to 50 A. D., at which time Roman Emperor Claudius named this colony for war veterans *Colonia Agrippina,* in honor of his wife. It was eventually shortened to Colonia, and, and later to the German "Koln" and French "Cologne."

Koln, with her huge airport, numerous industries and magnificent wharf, is Germany's third city, being outdone in size only by Berlin and Hamburg.

She has not taken to modern ways, as have other cities of Germany. She prefers old structures and gabled houses. The city fathers still hold council in the Town Hall, in the room where the Hanseatic League met centuries ago.

One of the leaders of this medieval organization, she was a free imperial city, subject only to the German emperor.

* * *

Cologne Water

Leading industry is the manufacture of eau de Cologne. Most of the shop windows feature it in their displays; venders sell it in railway stations and on the streets. The business was founded over 200 years ago by Johann Maria Farina. His descendants still manufacture the perfume in the old family residence, Julichsplatz.

Other industries include the making of cigars, chocolate, textiles, toys and machinery. Ford opened a plant here in 1931.

Climate and fertile soil are responsible for the Rhineland's noted white wines, produced in the area between Bonn and Mainz. Vineyards were here before the valley was occupied by Roman soldiers.

Among her noted places of amusement is the Gurzenich, "City Fathers' House of Festivity and Dancing," which is a popular place today. Built around 1452, it has welcomed many distinguished visitors. Concerts held here claim international renown.

In Little Budengasse street one may find many a neat place to dine on wiener schnitzel and beer.

One can swim in tanks on the Kaiser Frederick Embankment without fear of being swept downstream. Pathways run along the esplanade for cyclists and pedestrians.

But Koln, like the rest of Germany, has become Hitlerized. Nazi banners stream from the old buildings, and brown shirts are as common as short-pomp haircuts.

Editor Greeted at Kelvinator Plant

Ralph Searle (second from left), managing director of Kelvinator, Ltd., meets Editor Taubeneck at the entrance to Kelvinator factory in London.

England

Great Market

Booming England, prosperous and busy, is a great market for refrigeration products. For some years it has been in the vanguard of importers of American refrigeration equipment. In addition, it has a number of large factories of its own, which supply not only the United Kingdom trade, but that to the Colonies as well.

Electrolux maintains its biggest plant (if we exclude the American plant in Evansville—which is another company altogether) just outside of London. Frigidaire manufactures in England, too; and last year increased its production facilities considerably.

No exact production or sales figures are available, but you can pick up some guesses. I heard, for instance, that England's wired home market (5,315,000) is probably less than 6% saturated. One authority estimated that there are probably 425,000 household electric and gas refrigerators in use.

In 1935, I was told, there were 65,000 household jobs sold, about half of which were Electrolux. These figures cannot be guaranteed, nor can those that follow; but they are interesting as estimates, and as giving an idea of the market and its possibilities.

Among other leading refrigerator manufacturers in England are the following:

J. & E. Hall, Ltd., Dartford, Lord Dudley Gordon, managing director, produces between 5,000 and 10,000 commercial units of ¼ to 1½ hp., and a considerable number of larger units—on which they specialize—each year. No domestic units are manufactured. This is one of the biggest, oldest, and most important manufacturers of industrial refrigeration and air-conditioning equipment in the world.

Kelvinator, Ltd., where Ralph Searle is managing director and C. G. Thompson is chief engineer, annually manufactures between 3,000 and 5,000 domestic units, and from 1,000 to 2,000 commercial units of ¼ to 1½-hp. capacity.

Marco Refrigerators, Ltd., where A. E. Leach is managing director and Mr. Fuller, sales engineer, annually produces from 1,000 to 2,000 domestic units and from 1,000 to 1,500 commercial units.

L. Sterne & Co., Ltd., 1 Upper Thames St., London, E.C.4, is directed by Messrs. Field, Sr. and Jr., and turns out about 500 domestic jobs and between 500 to 1,000 commercial units of ¼ to 1½ hp. every year. Larger commercial units are also manufactured.

British Automatic Refrigerators, Ltd., 46 Gillingham St., London, S.W.1, makes from 1,000 to 2,000 ¼ to 1½-hp. commercial units as well as larger units, every year.

Coldair, Ltd., North Circular Road, London, N.W.2, where Messrs. Woodcock and Ellison are directors, produces between 1,000 and 2,000 domestic units and from 300 to 500 ¼ to 1½-hp. commercial units annually.

Leda Electric, Ltd., Mordan Road, Mitcham, with Mr. Hathaway in charge, turns out between 500 and 1,000 domestic units and from 300 to 500 small commercial units annually.

Icematic, Ltd., 172 Buckingham Palace Road, S.W., manufactures new coin automatic ice cream machines

(*Concluded on Page 28, Column 5*)

Frigidaire and York Do a Big Business Throughout England

(1) John Linebaugh, chief engineer of Frigidaire, Ltd., in the London plant. (2) Frigotray, Frigidaire product for butcher shops and meat markets, popular throughout Europe. (3) York-Shipley headquarters in London. (4) J. B. Farish, who directs York refrigeration and air-conditioning business in England, talks things over with a customer at the dog race track.

— AIR CONDITIONING NEWS —

Unusual Duct Arrangement Is Feature of Buffalo Office Building Installation

BUFFALO—A complete system of air conditioning, recently installed in the 12-story office building of the Buffalo General Electric Co. (one of the operating units of the Niagara Hudson System) features an unusual arrangement of ducts and other equipment for the proper distribution of air throughout the conditioned areas of the building without materially affecting the interior decorations, or altering the basic architectural features of the building.

By the use of the zoning system, together with the latest type of floor and ceiling air-conditioner units, located directly in or adjacent to the conditioned zones, it was possible to eliminate the usual system of large central air ducts. Thus, the amount of necessary alteration within the building was minimized.

Thermostatically controlled equipment provides flexibility in the control of temperature and humidity for summer cooling as well as for winter heating.

The initial installation, which provides the summer and winter air conditioning of the first and second floors, except the auditorium, of a six story office building (the remaining six stories being in the tower) is a part of the company's plan eventually to air condition the entire building.

The refrigerating elements of the air-conditioning plant consist of three 3x6 automatic Freon-12 compressors of the improved design, driven by 40-hp. motors equipped with automatic starters, which cut-out or cut-in the compressors as load requirements increase or decrease. Interlocking relays prevent all three of the compressors from starting at once and thus "bumping" the demand meters. Connected to the compressors is a chilled water circulating system of 100-ton capacity.

A temperature controller, located in the cold water line, operates through a motor driven contact switch to start and stop the three compressors in meeting varying load requirements. The Freon pump, which regulates the flow of refrigerant for the system, starts with the first compressor.

Nine air conditioners of the ceiling or floor type, placed at points in or adjacent to the several zones, are equipped with both steam heating coils and water cooling coils, for their dual function of summer cooling and winter warming of the air, as well as with humidifying and dehumidifying devices and air filters, so that an ample volume of clean, purified air at uniform temperature is delivered at all times and seasons from these units, directly to the conditioned areas.

Operation of this air-conditioning system is divided into two definite cycles—the summer cooling and dehumidifying cycle and the winter heating and ventilating cycle.

An automatic changeover, regulated by a thermostat placed in the outside air intake, automatically transfers the system from one function to the other when outside temperature reaches a given point. This point of change is based upon the normal balance for maximum comfort for each zone, thus equalizing heat losses.

For summer operation, when the outside temperature rises above that shown by the outside pilot thermostat, the chilled water valves are opened automatically, and the interior room thermostats, regulated by the master pilot thermostat outside, operate to modulate the automatic by-pass dampers in the air-distributing system.

During the winter heating and ventilating cycle, the face damper closes and the outside air damper opens as much as necessary to provide sufficient cooling. When it closes to the minimum position, the steam valve opens and by modulation of face and by-pass dampers, controls the inside temperature.

Humidity within the conditioned zones is automatically regulated by humidistats, controlling solenoid valves.

One of the unusual features of this installation, which is attracting special attention of engineers, architects and building owners, is the manner in which conditioned air is distributed uniformly through the several zones.

In the sales area of the main floor air is distributed through ducts equipped with chromium plated "Uniflo" grilles. The ducts are furred, plastered and painted to harmonize with ceilings and interior trim.

The mezzanine floor and portion of the main floor which includes the "customers' service room," are equipped with a sound-absorbing, light-reflecting, perforated ceiling of special design, through which air is supplied to these areas in a new and novel manner.

This ceiling consists of a number of "tiles" or "pans," 12 inches x 24 inches, each of which contains over 4,000 tiny holes per square foot, through which the conditioned air enters the room.

Above the perforated surface of the ceiling is a sound-absorbing layer of rock wool, and above this wool pad is a false ceiling, or plenum space, 6 inches to 10 inches deep, into which the air is first blown. The air passes around the edges of the pad into the space between the pad and the outer panel, and thence through the innumerable tiny perforations into the room.

Thus this unique ceiling not only absorbs sound and reflects light, but literally "breathes" fresh air.

The installation was made by K. W. Schauty, Inc., agent for York Ice Machinery Corp.

Absolute precision is imperative in every step of production of A-P Thermostatic Expansion Valves.
AUTOMATIC PRODUCTS COMPANY
MICROMETRIC PRECISION

$600,000 System Being Installed in Gimbel's Philadelphia Store

PHILADELPHIA — Without interrupting regular business, a year-around $600,000 air-conditioning system is being installed in Gimbel Bros. department store by Carrier Corp. of Newark. Cost of the plant will be about equally divided between labor and materials.

Charles S. Leopold, who recently designed the air-conditioning system for the U. S. Capitol, is consulting engineer. Installation, according to present plans, will be completed by June.

Floor space totaling 340,000 sq. ft. and including basements and first floors of four buildings, second floors of two, third floors of three, and the seventh-floor tea and dining rooms, will be air conditioned. Six of the store's eating places are in the conditioned area.

In summer, temperature inside the store will be maintained 15° F. lower than that outside, and humidity reduced to comfortable proportions. In winter, part of the new equipment will be used with the store's heating system. Automatic temperature control will be provided for both summer and winter operation.

Included in the new equipment are two 1,200-ton Carrier centrifugal compressors, located in the sub-basement, eight dehumidifiers, and 17 fans. Air-circulating capacity will be 370,000 c.f.m., and the system is designed to be draftless.

Expected results of the installation, according to Arthur C. Kaufmann, executive head of the store, include increase in sales, greater personnel efficiency, and reduction of illness among employes.

23 Conditioning Jobs in Houston During March

HOUSTON, Tex. — Twenty-three installations of air-conditioning equipment were made in this city during March, according to figures compiled by Houston Light & Power Co., public utility.

Largest installation made during the month was in the Second National Bank Building, where a 400-ton system, using Frick equipment, was put in service.

Other large jobs were Navarro Oil Co., in which a 30-ton General Electric system was installed; Weingarten's Grocery No. 5, where a Carrier system of 35-ton capacity was installed; Foley Bros. and Houston Milling Co., where Frigidaire systems of 10 and 15 tons, respectively, were put in service; and G.M.A.C. office, in which a 10-ton Carrier system was installed.

Three residential jobs were included in the month's total, all of them Carrier installations. Homes conditioned were those of John Hamman, Jr., Ernest Langston, and S. P. Farish.

More than half the month's installations were made by Carrier, the total being 12 for that company and three each for General Electric and Frigidaire, two each for Westinghouse and York, and one for Frick. One of the York jobs was an ice system in the plant of Texas Ice & Fuel Co.

March Installations in Houston, Tex.

Name	Equipment	Tonnage
John Hamman, Jr., residence	Carrier	7.5
Ernest Langston, residence	Carrier	5.0
S. P. Farish, residence	Carrier	1.5
G. M. A. C. Office	Carrier	12.5
Hugh Potter, Office	Carrier	2.0
Second National Bank Bldg.	Frick	400.0
Engleberd & Dorsey	G-E	3.0
Brooks System	Carrier	10.0
Gittings, Inc.	Carrier	5.0
Frick-Reid Supply Co.	Carrier	7.5
The Fashion	Carrier	...
Capitol Optical Co.	Frigidaire	2.0
Navarro Oil Co.	G-E	30.0
7-Up Bottling Co.	Westinghouse	3.0
Foley Bros.	Frigidaire	10.0
Houston Milling Co.	Frigidaire	15.0
The Chef Cafe	Carrier	3.5
Mading's Drug	York	8.5
Chamberlain's	Carrier	3.5
Weingarten's Grocery No. 5	Carrier	35.0
Nowell Grocery	Westinghouse	9.5
Sartartia Dairy	G-E	2.0
Texas Ice & Fuel Co.	York	Ice

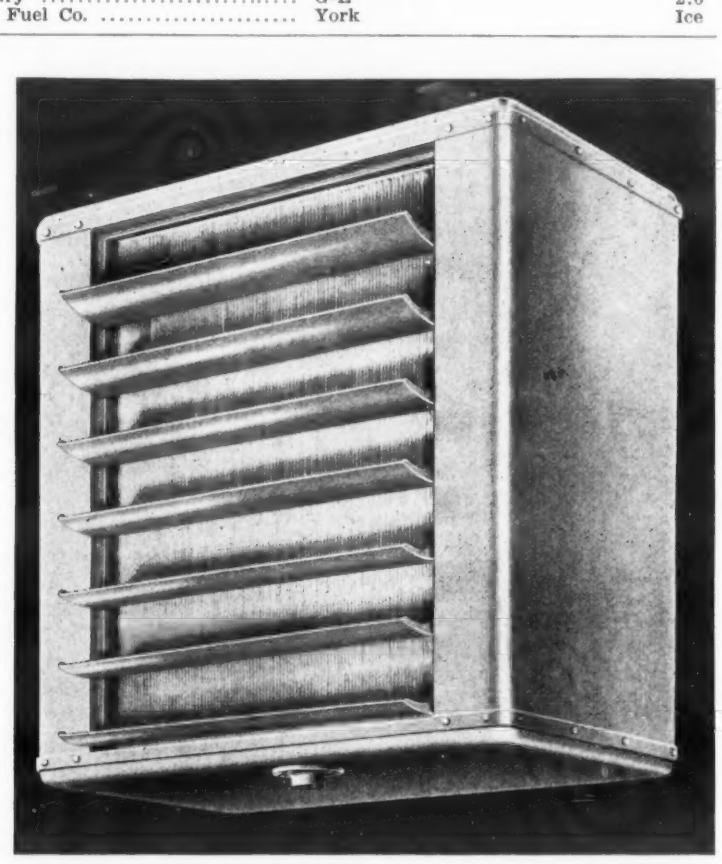
Three Join Sales Staff of Detroit Gar Wood Branch

DETROIT—R. J. Owen, Joseph F. Pope, and Arthur C. Bader have been added to the sales force of the Detroit air-conditioning branch of Gar Wood Industries, Inc.

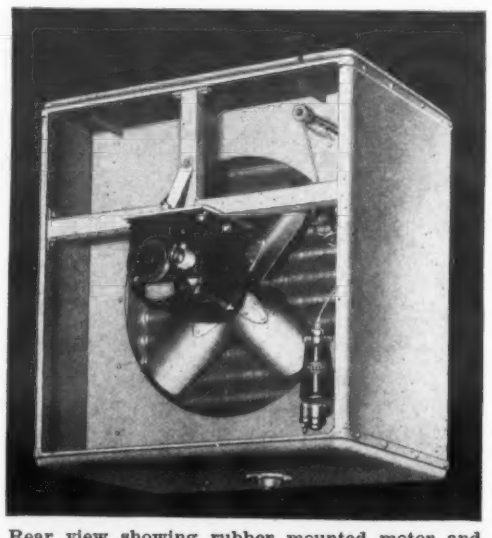
HEAT TRANSFER SPECIALISTS SINCE 1896

Announcing

FEDDERS SERIES 73 UNIT COOLERS



FOR COMMERCIAL REFRIGERATION AND COMFORT COOLING



Rear view showing rubber mounted motor and fan assembly, Fedders Thermostatic Expansion Valve, hangers and drain connection on new Series 73 Unit Cooler.

YOU GET EXTRA VALUE AT NO EXTRA COST WHEN YOU SPECIFY FEDDERS

Non-Frost Coils, Evaporators, Unit Coolers, Condensers, Air Conditioning Units and Coils, Automatic and Thermostatic Expansion Valves, Constant Pressure Valves, Check Valves, Filters, Dehydrators, Unit Heaters.

A new line of Fedders Series 73 Unit Coolers for commercial refrigeration and comfort cooling is added to the present line of unit coolers.

In addition to their many applications for commercial refrigeration, their handsome cabinets and quiet operation make them ideal for comfort cooling in offices, stores, restaurants and other places where correct temperature is important to the comfort and working efficiency of people.

The cooling elements are made of 5/8" OD seamless copper tubing. FLAT COPPER FINS ARRANGED VERTICALLY provide quick drainage of condensate. Models 142 and 162 have two parallel banks of tubing. Model 164 has four parallel banks. Inlet and outlet of all banks are manifolded in parallel by means of headers brazed to tubing. Cooling element is finished in Fedders Silver Satin finish.

Adjustable louvers can be furnished as extra equipment when specified on orders.

Fully enclosed moisture-proof constant speed 110 volt 60 cycle A.C. motors standard equipment. Three speed motors also available. Motors for all other current characteristics can be furnished.

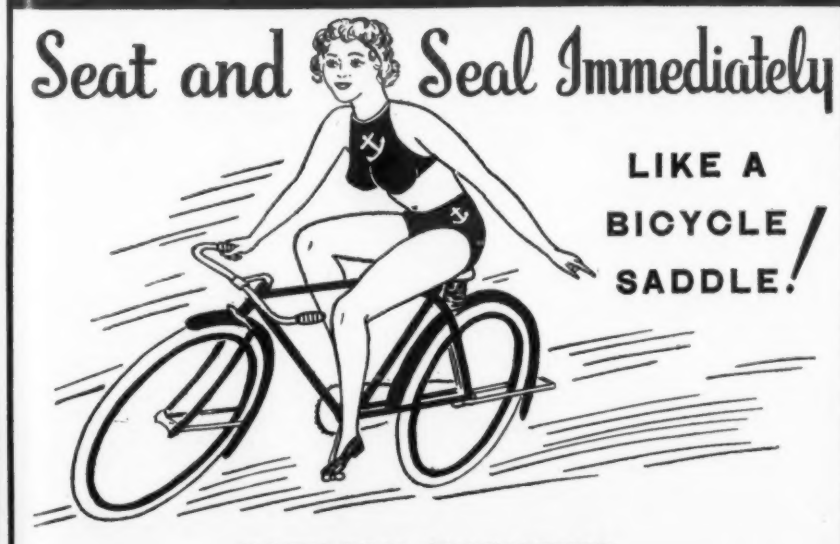
Write for Bulletin 301.

FEDDERS MANUFACTURING CO.
57 Tonawanda Street, Buffalo, N. Y., U. S. A.
Sold by Representative Suppliers Everywhere

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

AERO SELF-ALIGNING SEALS

Seat and Seal Immediately



LIKE A BICYCLE SADDLE!

EVERY SEAL GUARANTEED

COVERED BY U.S. PATENT 2,067,540 OTHER PATENTS PENDING

AERO PRODUCTS CORPORATION
36-52-36th St., Long Island City, New York

AIR CONDITIONING AND REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News.

Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell—Detroit

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $4.00 per year; 2 years for $7.00. All other foreign countries: $6.00 per year.
Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.
Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
PHIL B. REDEKER, *Managing Editor*
THEODORE T. QUINN, *Assistant Editor*
WINIFRED HUGHES, *Assistant Editor*
Departmental Editors:
K. M. NEWCUM, *Refrigeration Service*
F. O. JORDAN, *Air Conditioning*
Staff Reporters:
WILLIAM H. LONG, ALFRED JONES, JAMES MCCALLUM, and R. H. POTTER

R. T. CARRITHERS, *Advertising Mgr.*
HELEN K. GILMORE, *Asst. Adv. Mgr.*
JAMES B. SMITH, *Asst. Adv. Mgr.*

JOHN R. ADAMS, *Business Manager*
ROBERT P. NIXON, *Asst. Business Mgr.*
JEAN H. ADAMS, *Subscription Manager*
LOLA E. DEW, *Circulation Manager*
WINIFRED MERSON, *Spec. Representative*

Advertising Representatives:
John B. Gallagher Co., Inc.,
11 W. 42nd St., New York, N. Y.
Pennsylvania 6-1880
Lewis & Noelle
612 N. Michigan Ave., Chicago, Ill.
Superior 8550

Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOL. 20, NO. 17, SERIAL NO. 423
APRIL 28, 1937

Copyright, 1937, Business News Pub. Co.

Industrial Southland

A QUICK SURVEY of leading manufacturers made last week by editors of the NEWS indicates that the air-conditioning and refrigeration industry as a whole is currently running at top speed. In the light of the fact that the industry's production facilities were notably enlarged late last year, this means that the output of refrigeration and air-conditioning equipment is now at the highest point in history.

In addition to the cheering news of capacity production from all quarters came wind of an interesting trend. The South seems to be absorbing more of this production than the market analysts had predicted. Distributors in the southern states are at the moment finding it difficult to get complete shipments on their orders.

New Industries Plus Government Largesse Make Prosperity

Persistent wooing of manufacturing interests from New England and elsewhere in "the North," plus government largesse, have made the southern states leaders in the return to prosperity.

The South today presents as promising a field for business expansion as any section of the country. Young men looking for a region which is growing and has a future may well consider the advantages held by the South, and also take into consideration the part air conditioning will play in its development as well as the consequent opportunity this industry will afford.

Cheap Labor Attracted Northern Industrialists

In the early twenties, Northern industrialists began to turn an envious eye toward the cheap labor of the South. Their interest was much more than a casual one, too, for in at least one case, a group of New England business men planned and carried through a good-will tour of the Southeastern states, visiting various plants, and plant sites, and getting first-hand information on business conditions.

Except for the brighter promise held out at that time by Wall Street and Florida land speculation, Southern industry might well have blossomed out about a decade ago.

South Leads Nation In Population Growth

Roger Babson, the statistician, points out that "as late as 1919, 52% of the nation's cotton spindles were in New England, and only 42% in the South. Today the South has 59% and New England only 38%. This change has taken place because of the unionizing of labor in the North and the fact that it was more efficient to be closer to the sources of raw material."

The Southward migration is shown by the census totals of 1930-1935, as these figures, says Mr. Babson, "show that the South is today leading all sections of the country in growth of population—the rate, the national average." Furthermore, the share of industrial income going to seven southern states "has shown a consistent gain each year right through the depression."

Babson Lists Four Reasons For Growth of South

Four specific reasons are given by Mr. Babson for the spectacular growth of the South.

"First is that production costs are lower. Factories can be built 20 to 30% cheaper than in North or West. Plumbing and heating economies are tremendous.

"Second, there is ample supply of labor at low prices. Wages can be 10 to 20% less because living costs are that much lower.

"Third, there is plenty of cheap power.

"Fourth—and very significant—the South is not yet union-ridden. The combination makes the Southland a magnet for Northern businessmen and their industries."

The Favor of the Present Administration

Still further sunshine for the Southern states is generated by the favor of Mr. Roosevelt and the present Administration. The President has long thought of Warm Springs, Ga., as a second home, and when you add to that the traditions of a Solid South behind his party, it is easy to see why relief cash and public works have been spread freely throughout that section of the country.

Tobacco and cotton markets, too, have come in for a lot of attention in Washington. Even the enemies of the Administration must admit that one really successful project of the New Deal has been the raising of consumer purchasing power in the South.

Southern Business Opposes Leftism, Appreciates Favors

Though unspoken, this goal has had its effect on Administrative planning from the beginning. And it is significant that this is the first time since the war between the States that Washington's fullest blessings have been turned Southward.

Many Southern business men gave an encore last November for just this reason. They are staunchly opposed to the Administrative leftist tendencies—as business men; as Southerners, they appreciate their first good taste of governmental favors.

Southern Trade on Brisk March Upward

The January trade indices published in *Dun's Review* are indicative of the rapid progress which is so noticeable in all the Southern states. In Texas, Arkansas, Louisiana, and Mississippi business was 15 to 20% above the same month last year. And Florida, Georgia, Tennessee, South Carolina, North Carolina, Virginia, West Virginia, and Maryland all enjoyed increases of better than 20%.

Since trade indices more recent than January aren't available, some comments from *Dun's Review* in regard to trade in the South this past month are presented as enlightening and indicative: "Richmond building permits double last year"—"Baltimore heavy industries especially active"—"high prices following California freeze giving Florida citrus growers best returns in five years"—"Furniture manufacturing up 50% in Memphis"—"New Orleans wholesale trade brisk."

That the South today is rising in an upward spiral is shown by the fact that branch plants are springing up everywhere, factories are spreading out geographically as a protection against labor troubles and as a result of the Robinson-Patman Act. Meat packing, food products, metals, paper, chemicals, other and new industries are "moving in." The workers in these plants in turn enlarge the markets for the products they make, and more factories are built.

Air Conditioning May Solve South's Biggest Drawback

However, the South has its troubles. Note this from Mr. Babson: "The summer heat problem may be solved in part by air conditioning."

This particular problem of the South—one of its biggest drawbacks industrially—furnishes an almost unlimited opportunity for the air-conditioning industry. All work done indoors may be comfortably carried on right through the hottest summer days with the aid of comfort cooling. As a majority of all work *is done indoors*, the problem of conducting business through the summer heat ceases to be a problem when air conditioning has been installed. Air-conditioned homes may solve the problem of proper rest, so that men may maintain their efficiency level during the day.

Promising Field for Dealers in Refrigeration & Conditioning

A sidelight on the benefits of air conditioning to the South is the statement made in the April 14 issue of the NEWS by Dr. C. A. Mills, professor of experimental medicine at the University of Cincinnati, that the efficiency of the South will increase with its adoption (air conditioning) and the hazards of infectious diseases will be lessened.

One of the most important sources of business, to the air-conditioning industry in general, has been the processing factories engaged in the preparation of foods, chemicals, rayon, rubber, and drugs, which are among the very industries settling in the South today.

The combination of increased income, enlarging prospects, and a great natural need for refrigeration and air conditioning make the South today a field of promise for men engaged in the sale of air-conditioning and refrigeration equipment in that sector. Thoroughgoing promotion and intensive market cultivation should undoubtedly yield happy results for all concerned.

— LETTERS —

Why 1937 Specifications Data Is Incomplete

The Falk Mercantile Co., Ltd.
Boise, Idaho
April 22, 1937.

Editor:

We have just received your Household Refrigerator manuals, dated March 17, 1937, and we are badly disappointed.

Is it possible to receive a list of specifications such as you published in your April 22, 1936, issue? The competitive information listed in this number was complete, and very helpful. If it is possible to get the 1936 issues of the April 22nd number, or if you have similar information for the 1937 refrigerators we would like to get copies of them. Please let me know as soon as possible.

The specifications that you have sent us are identical to those issued by the Nema Assoc. of Refrigeration, and we cannot possibly use them. The information is far too incomplete to be of use to our salesmen. We will be glad to exchange them, if possible, for the April 22, 1936, issue.

R. G. KOLBE.

Answer: See below.

Titche-Goettinger Co.
Home Appliance Branch
Interurban Bldg., Dallas, Texas
April 23, 1937.

Editor:

We received the specifications booklet on household refrigeration covering 1937 models and were surprised to note in many cases you have left out the horsepower rating of the motors on many different makes of refrigerators.

I am sure we are among a large number who are wondering why this was done.

It has always been our thought it was your desire to acquaint the public and your subscribers with the correct facts and have not been in favor of evasion in any manner.

We subscribe to your paper for the excellent information it gives and the complete facts along different lines and we cannot help but write you to the effect and advise of our disappointment in the specifications booklet not being any more thorough than what it is, however, we would like to compliment on the manner in which the booklet is made up, in its present form it is easier to carry and its make up is very fine. Here is hoping the next issue will contain the information it should really have with reference to the horsepower ratings of the motors.

TOM SAWYER.

Answer: As explained in previous issues, it has been the aim of the NEWS to supply the fullest possible information regarding the details of design and construction of the various models and makes of refrigerators on the market.

Several years ago, when the NEWS first undertook to publish this data, some of the manufacturers were strenuously opposed to the idea for reasons of their own. In time, however, it became an established practice and all of the leading manufacturers cooperated with the program.

This year the company members of the Refrigeration Division of National Electrical Manufacturers Association (Nema) decided to publish their own specifications in the form of a booklet and distribute it through their own organizations. Permission was granted to the NEWS to reprint the data *after* it had been published and distributed by the Nema companies. In granting this permission it was specified that the copyrighted data must be reprinted exactly as it appeared in the Nema booklet.

Perfection in No Deals With Sears, Roebuck

Perfection Stove Co.
Cleveland, Ohio
April 23, 1937.

Editor:

Our attention has just been called to an article in the AIR CONDITIONING AND REFRIGERATION NEWS, April 14 issue, entitled, "No, the Gangsters Didn't Get Australia's Mr. Hallstrom."

In that article you refer to Mr. Keith of the Perfection Stove Co., and knowing your desire for accuracy of statements published, we wish to call your attention to the fact that Mr. Keith is not connected with the Perfection Stove Co., nor has he been for approximately a year.

Further on in the article, it is stated that there is an unconfirmed rumor that Perfection Stove Co. will build the Sears oil-fired refrigeration line for the 1938 season, and we wish to state that there is absolutely no foundation whatsoever to this report, or rumor, as we have no intention of building refrigerators or any other product of our manufacture for Sears, Roebuck & Co.

May we suggest that rumors of this kind, even if published as rumors, be referred to us, so that we may have an opportunity to confirm such reports before they are published.

S. M. BARBER, Sales Manager,
Refrigeration Division.

Publicizing True Elements of Air Conditioning

B. F. Sturtevant Co.
Hyde Park, Boston, Mass.
April 26, 1937.

Advertising Manager:

I think the advertisement that was prepared for your April 7 issue is excellent.

Air conditioning is so misunderstood by the layman, that it is only by continually publicizing its true elements and position that the layman can be educated to purchase the correct necessary elements, and to then obtain what is expected in the way of performance.

The text of this advertisement was written in simple, understandable, and effective language.

E. B. FREEMAN, President.

Another Request for Air Conditioning Data

Westinghouse Electric & Mfg. Co.
246 East Fourth St., Mansfield, Ohio
April 23, 1937.

Editor:

While reading through your April 14 issue, I read with a great deal of interest the reprint of the letter you received from Mr. J. L. Rosenmiller, manager of the York Ice Machinery Corp., with reference to the list of air-conditioning installations by cities and utilities that have appeared in your publication during the past couple of months.

As a manufacturer of air-conditioning equipment, we too would be very much interested in obtaining a reprint of all air-conditioning installations in booklet form, and would be willing to pay for the expense involved in compiling this.

Undoubtedly many of the other manufacturers and other interested individuals will read this, and I am sure they will feel the same as we do about such data.

S. F. MYERS, Manager,
Air Conditioning Sales.

Editorial Commendation

Kold-Hold Mfg. Co.
Lansing, Mich.
April 9, 1937

Mr. E. A. Stowe, Publisher
Michigan Tradesman
Grand Rapids, Mich.
(Copy for Mr. Taubeneck)

Dear Mr. Stowe:

Enclosed herewith please find editorial page from the March 31st issue of AIR CONDITIONING & REFRIGERATION NEWS containing one of the most meritorious criticisms that I have read concerning the strike situation in Michigan and the New Deal in general under the title of "Grab it While You Can."

This article was written by Mr. George F. Taubeneck, Editor, who like yourself, does not mince words when it comes to presenting cold facts and I thought that you would probably not only be interested in reading this wonderful article, but possibly also quoting it in next week's Tradesman, which I know that Mr. Taubeneck would gladly approve of with proper credit to him, and for his information I am going to forward Mr. Taubeneck a copy of this letter.

W. G. FARNSWORTH

Henderson Asks for Travel Series Book

Air Conditioning Manufacturers' Association
Southern Building, Washington, D. C.
April 23, 1937.

George Taubeneck:

I feel the same way F. Brenton Taylor does about your articles, "Around the World with George Taubeneck." If you ever do compile those stories in book form, I most certainly want a copy.

The April 21 issue of the NEWS is a particularly interesting one, and I am wondering whether you would mind asking your circulation department to send me four extra copies, billing us for the cost involved.

WILLIAM B. HENDERSON,
Executive Vice President.

Kindly enter our subscription for REFRIGERATION NEWS for the next two years following the expiration of our present one.

We sure enjoy your magazine and rest assured we file every issue away for future reference.—Star Household Appliance Corp., Division of Abrams Bros., 27 Main St., Flushing, N.Y.

THE AIR AGE

BY F. O. JORDAN

Air Conditioning in the Steel Mill

Probably the last move in the Battle of the B.t.u.'s will be when they start installing 100% air conditioning in the steel mill. For nowhere could one imagine a tougher heat gain B.t.u. for the Refrigeration B.t.u. to do battle with than the type which results when a battery of cupolas goes into action.

Anyway, a steel worker who expects to be comfortable while a-plying his profession doubtless would be deemed a "sissy" by his parboiled peers.

Any air conditioning at all in a steel mill sounds like the Nth degree of believe-it-or-not-ness, yet there it is. For an authentic case is on record of a ½-ton self-contained air conditioner which is installed in the control cab of an overhead crane in steel mill service.

When it was necessary for the cab to hover above a furnace or blooming mill in its pre-air-conditioned days, it was said to be only a question of whether the operator would be fried "straight up," or "over." But now the operator in his air-conditioned oasis high up above the craneway looks calmly down in solid comfort upon a burning world.

No longer is he blinded by his own perspiration, or tortured by the fires of Hades while engaged in the ticklish business of pouring molten metal from a 10-ton ladle into mold. The result is safer and more efficient performance from the man in the hollow of whose hand rests not only the making of the day's quota, but even the very lives of a score of his fellow workers down on the floor below.

Nor is this the only instance of what air conditioning actually has done in the steel mill, as the operating room of one of the latest mills is similarly conditioned for the comfort of the operator. It is said that the comfort so provided enables the operator to give closer and more effective attention to the control of his mill.

Carbon Dioxide in Air Conditioning

All refrigerating engineers recognize that carbon dioxide has a rightful place in air conditioning when used as the refrigerant, but they would also say that it has no business mingling with the air within the conditioned space.

(For a more detailed discussion of the use of carbon dioxide in cold storage, see the article by C. D. McLaughlin of Kelvinator Corp. on pages 25 and 26 in this issue.)

But it all depends upon what the particular air-conditioning installation is designed to do.

The principal effect of carbon dioxide upon human life is to slow up the rate of living, or perhaps to arrest growth, merely because it displaces its volume of the oxygen which is necessary for growth and life. If a very high concentration of this gas is present, the life of the human being might be completely arrested.

However, all air conditioning is not meant for immediate human consumption. Air conditioning is used also for many kinds of fruits, to preserve them for human consumption later on. The prime function for this type of air conditioning is to arrest the growth of certain influences which hasten ripening and decay of fruit.

For many years temperatures have been reduced to arrest these growths, and to slow up the living rate of fruit to preserve it for the use of fruiters. But now the astute air-conditioning engineer makes use of the "slowing down" influence upon rates of living to assist the benumbing influence of cold in achieving the preserving effect.

For it has been demonstrated that by mixing a proportion of carbon dioxide with the air in the fruit cold storage room, the stored fruit may be preserved for longer periods, and even the ripening of green fruit may be postponed until the fruit is required, or the price is right, when it may be matured quickly at will by raising temperatures and replacing the carbon dioxide with oxygen.

Whereupon fresh-ripened fruit direct from the air-conditioned cold storage plant is at your service.

Reduced Gas Rates Due To Air Conditioning

Interesting is the announcement by Chicago's Peoples Gas, Light, & Coke Co. of a reduction in gas rates from May 1 to Sept. 30 to 2¼ cents per 100,000 B.t.u., because it is said that the rate drop is the gas company's first bid for the job of furnishing power for operating Chicago's air-conditioning systems.

Left "holding the bag" all summer with unwanted gas on their hands by the big drop in gas demand which always goes along with the fade-out of the heating season, the utility envisions hopes of bolstering up the gas-demand curve of summer by dropping the consumer price of gas during the off-heating period to a level at which folks cannot afford not to drive their air-conditioning equipment by means of internal combustion engines operating on gas drawn from the gas mains heretofore practically idle in the summer.

The new rates are said to be as follows:

Three cents per "therm" for first 1,500 therms per month, between April and November.

Two and one-quarter cents per therm in excess of 1,500 therms during the same period.

Four and one-quarter cents per therm in April and October, and 12 cents the rest of the time.

(1 therm = 100,000 B.t.u.)

Air Conditioning the Dairy

In keeping with the modern trend toward the complex, the up-to-date dairy now has added many manufacturing process to its one sole function of extracting milk from the cow.

Such processes include pasteurizing, ice-cream making, and cheese making. These processes are performed with greater ease and speed, and result in superior products if they are carried on in clean air which is kept in constant motion at properly controlled temperatures and humidities.

In addition to the need for air conditioning in these departments, the presence of huge bulks of the various products in the great modern dairy plant involves problems of cold storage which did not apply to the small-time cow-to-consumer plant which was the rule in the horse-and-buggy era, while human comfort has assumed a prominence undreamed of in those robust days now gone forever.

Before the hardboiled and non-resident owner of the milk-and-cream plant can be induced to spend for air conditioning any of the "cream" that he has "milked" from his business, he must be convinced that he will reap his reward right here on earth in hard cash. This reward can result only if product quality and quantity are raised, so that there will be a better product to lure the ever fastidious modern consumer, and more of the better product for the producer to sell.

No intangible dream is the well-proven fact of improved employe performance under conditions of employe-comfort, while recent scientific research has discovered that even the stolid bovine acknowledges comfort with more and richer milk. Thus it is well known that comfort air conditioning pays in office and stable alike, and, of course, everyone knows how the comfortable salesroom draws the customer.

In rooms where comfort is the aim of air conditioning, the conventional condition of 80° dry-bulb temperature with 50% relative humidity is satisfactory. Such locations include private and general offices, laboratories, salesrooms, drivers' settling-up rooms, and stables.

In locations like milk storage and bottling rooms, much lower temperatures must be maintained to prevent milk spoilage. Temperatures of 40° F. or somewhat lower are recommended.

For maintaining such low temperatures, the use of ice is impracticable, while there are many other obvious objections to cooling of the large plant by this method. For this reason the use of low temperature pipe coils has been common, though by no means entirely satisfactory.

The difficulties with pipe coils are as follows:

(A.) Frosting up of coils due to low coil temperatures used, and loss of time and absence of refrigeration during frequent "defrosting" periods necessary for clearing coils of frost. The low rate of heat transfer from the slow-moving, gravity-circulated air necessitates the use of very low refrigerant temperatures in order to avoid coils of excessive size.

(B.) Useless dehumidifying of air by the low-coil temperatures required.

(C.) Stagnation of air, and poor temperature distribution due to ineffective gravity circulation of air.

(D.) Formation of fog in the air, and of mold and slime upon interior surfaces due to concentrations of moisture from wet bottles and crates, and from infiltration. Such conditions cannot exist with the good mechanical circulation of air that results from use of air-conditioning equipment.

(E.) Dripping from coils during defrosting periods, and from other surfaces at all times.

The damp, moldy, and odorous condition characteristic of such rooms can be entirely eliminated, and even temperature distribution may be obtained by the forced circulation of air at proper temperatures and humidities from an air-conditioning unit or system.

Because of the much higher rate of heat transfer to the cooling unit under forced-air circulation, refrigerant temperatures high enough to prevent frosting and unnecessary dehumidification may be employed without necessitating the use of a cooling unit of excessive size.

In ice-cream mixing and freezing rooms, in butter-printing and packing rooms, and in rooms where similar processes are carried on, recommended temperatures are 60° to 65°, with relative humidities of 60% to 70%. Here again even temperature distribution and uniform air circulation may readily be obtained and controlled as best suited to the requirements of the installation by the use of air conditioning.

In the cheese-curing room, temperatures of 60° and higher with relative humidities running as high as 85% to 95% for certain varieties are said to result in certain desired textures and qualities of product.

The degree of cooling, combined with the relatively low rate of dehumidification generally necessary for obtaining these room conditions, may be delivered and controlled by an air conditioner in which a shallow cooling unit at rather high refrigerant temperature and face air velocity is used.

In the ice-cream hardening room, where temperatures of —20° to —40° are common, hardening times have been halved by the use of special low-temperature air-conditioning units which discharge a frigid air stream at high velocity against the ice-cream cans.

Mutter Opens New Appliance & Air-Conditioning Store

EASTHAMPTON, Mass. — R. F. Mutter Co., plumbing and heating concern, recently opened a new store at 106 Cottage St. and will handle Kelvinator refrigerators, Mutter burners, and H. B. Smith heating and air-conditioning equipment.

Modernistic metal and leather furniture equips the new display room. R. F. Mutter, owner of the company, has been in business here for 16 years.

Coffey's Dept. Store to Retail Crosley

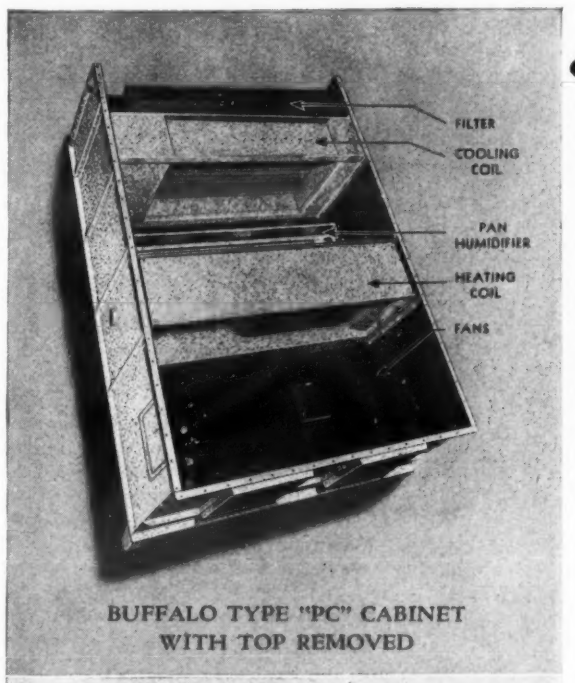
CHARLESTON, W. Va. — Coffey's, department store, has opened a new electric appliance department handling Crosley refrigerators.

AIR CONDITIONING becomes a simpler problem

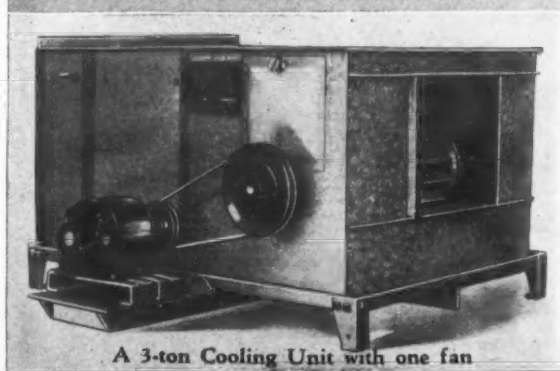
with

"Buffalo"

TYPE "PC" Central . . . Conditioning Cabinets



BUFFALO TYPE "PC" CABINET WITH TOP REMOVED



A 3-ton Cooling Unit with one fan

• If you are interested in solving all of your air conditioning jobs quickly, simply, and still obtain the most quiet and efficient unit for the job, you can do it easily with "Buffalo" Type "PC" Central Conditioning Cabinets.

The cabinets are available in capacities from 3 tons up and in combinations suitable for single cooling or complete air conditioning; including summer cooling and dehumidifying, winter heating and humidifying, and year 'round cleaning. Any or all of the above functions may be automatically controlled when desired.

You obtain all of these advantages when you install "Buffalo" Air Conditioning equipment because we have been solving air conditioning problems all over the world for many years.

Write for complete information and copy of our new Bulletin No. 201-B.

"See your consulting engineer."

BUFFALO FORGE COMPANY
487 Broadway Buffalo, N.Y.

Branch Engineering Offices in Principal Cities

IN CANADA: CANADIAN BLOWER & FORGE CO., LTD., KITCHENER, ONT.

Buffalo "PC" Cooling Cabinet is bringing increased summer patronage to this attractive store.

Department Store completely air conditioned with Buffalo "PC" Cabinets.

MOISTURE-PROOF

Developed by Sylphon engineers to meet the need for a trouble-free Automatic Expansion Valve—one that will function properly for long periods without attention—maintain constant pressure—save servicing time and trouble.

No rubber breather cap. Moisture-proof. Has corrosion-proof, non-metallic poppet and seat that close-off positively. Ample size, easily removable filter. All wearing parts renewable. Use it as standard equipment or for replacement . . . on Methyl Chloride, Freon and Sulphur Dioxide systems. Write for Bulletin O-5000.

FULTON SYLPHON COMPANY
Refrigeration Division
Knoxville Tennessee

Sylphon TRADE MARK

AUTOMATIC EXPANSION VALVE

For the Air-Conditioning Distributor-Contractor

This series of articles by T. H. Mabley, chief engineer of Mechanical Heat & Cold, Inc., Detroit air-conditioning distributor, is written for the use of the air-conditioning distributor and contractor in solving problems of equipment design and installation.

Case No. 13 which appears on this page discusses the methods for solving problems involved in making an installation in a small commercial establishment, typified in a women's dress shop.

Compilation of Mr. Mabley's articles into a pamphlet for ready use by an air-conditioning contractor or dealer is being started by the NEWS. Announcement will be made in the NEWS as soon as these pamphlets are ready for distribution.

This series of case studies is entitled "How to Select and Install Air-Conditioning Equipment." Each study includes an illustration of the method of making the installation, and in some cases, tables to be used in figuring the load requirements or some other factor for the specific job.

The case studies which have appeared in AIR CONDITIONING AND REFRIGERATION NEWS are:

Case No. 1, A Single Office (Jan. 6); No. 2, A Conference Room (Jan. 13); No. 3, Residence System with Room Cabinets (Jan. 20); No. 4, Typical Commercial Application—A Shoe Store (Feb. 3); No. 5, A Beauty Parlor Feb. 24); No. 6, A Coffee Shop (March 3); No. 7, A Process Job (March 10); No. 8, A Doctor's Suite (March 17); No. 9, Central System for a Group of Offices (March 31); No. 10, A Residence (April 7); No. 11, Upper Floor of a Residence (April 14); and No. 12, A Men's Apparel Store (April 21).

HOW TO SELECT AND INSTALL AIR-CONDITIONING SYSTEMS

By T. H. Mabley, Chief Engineer
Mechanical Heat & Cold, Inc., Detroit

Case No. 13
A Women's Dress Shop

Installation of air conditioning in small commercial establishments often requires the use of more than one conditioning unit. This may be necessary to assure the proper air distribution, to fit the equipment in with the particular physical condition of the building, or because the actual conditioning load requires more than one of a particular type and size of unit.

Fig. 1 illustrates the use of two units in a women's dress shop. A study of the physical arrangements of the space to be conditioned indicates a difficult problem of distribution and a limited space for equipment.

The shop is located on the first floor of a large store building. The adjacent space above and on both sides is occupied by other tenants and the basement below is used for storage. Only the front and the rear are exposed.

The actual store layout is complicated by a mezzanine which covers about one third of the conditioned area. On this mezzanine is located the alteration department and there is very little excess space available for equipment. Under the mezzanine there are several fitting rooms for customers with partitions which come practically to the ceiling.

For this reason and because the owner is particularly interested in maintaining a comfortable condition in the dressing rooms a system must be devised to take care of each of these rooms individually. The sales space which is long and narrow must be properly conditioned to maintain an even temperature throughout its entire length.

The heating of the store is accomplished to the owner's satisfaction by steam radiators located at the rear of the store and near the front entrance at the front. By providing a means of introducing fresh, tempered air into the store any possible cold drafts in the sales space that might be caused by the normal infiltration from the front door will be reduced.

A search for valuable space for equipment turns up one obstacle after another. The only place for a central unit would be in the front part of the basement and this would require quite an elaborate duct system to provide air to the entire conditioned area. Cutting through the floors also would be a costly item.

While the mezzanine space used for alteration work is very crowded it presents two possible locations for small units. First, the space between the stair well and the mezzanine railing is rather narrow and practically useless, as a work space. With slight changes, however, it can be made just the right size for a standard small air conditioner of a capacity to handle about half the cooling load. The actual depth of the conditioner can be kept to a minimum by elimination of the heating or tempering coils.

On further investigation it is found that by making some minor rearrangements an area can be cleared in the back corner of the shop to provide room for a second air conditioner. This unit will sit on the floor and a shelf can be built above it to partly make up for the work space sacrificed.

By so locating the equipment the only available space will be utilized in the most economical manner. This arrangement will also permit use of a fairly simple duct system to perform the desired air-conditioning functions.

The installation is primarily intended to limit the maximum inside temperature during the hot summer days, and to keep a comfortable temperature in the store either by actual refrigerative cooling or ventilation during the mild days.

Because of the particular type of business carried on in the shop, air cleaning is a very important item. A great deal of spoilage is caused by dirt which is borne by the air which must eventually settle on something.

Particular attention must be given to the care of the filters after they have been installed. If they are of the replaceable type they should not be permitted to clog up with dirt up to the point where they begin to become ineffective and in some cases begin to 'unload' before being renewed.

It they are to be of the cleanable type they must be cleaned regularly to give the very best efficiency. Only with proper care will a system in this type of an establishment give the best satisfaction.

Let us consider the layout for the air-distribution system in this particular case. The unit which can be placed just ahead of the stair space will be used exclusively to cool the main body of the store. Air will be recirculated entirely through this unit.

The air-supply system consists of one outlet equipped with a diffusing-type grille to provide for the rear of the sales space and a duct which carries air to the front portion of the store. This duct will run across the top of the wall cases and can be concealed by a panel installed flush with the front of the cases and extending up to a point just above the top of the duct.

In this concealing panel will be installed the supply grilles for the front of the sales floor. The air will return to this unit simply by circulating up the stairs to the mezzanine.

Conditioner No. 1 will have to be selected on the basis of 80° F. dry bulb and 50% humidity inlet air which are the inside design conditions.

The other air conditioner will have a different function than the one just discussed since this unit must introduce all the fresh air for the whole system and filter, cool or heat, and distribute it to all the conditioned areas. In addition to this function it must provide cooling for the fitting rooms and work space on the mezzanine.

With unit No. 2 in the location selected fresh air can be brought in from the rear of the building and the recirculated air carried back to the unit by means of a short duct installed on the ceiling of the space below and connected to a large grille located in the hallway for the fitting rooms.

The supply system will be laid out to provide an individual small supply grille in each dressing room from a duct to be run along the ceiling under the mezzanine.

Another supply duct will be installed along the mezzanine wall at the floor and will be equipped with discharge grilles on the top to provide some air to the work space. This same duct continues out to the mezzanine rail and connects to a grille which will be installed to match the other grille on the opposite side of the rail at unit No. 1 location.

The cooling output of this second unit will be selected on a basis of 85° dry bulb and 47½% relative humidity which is actually the mixture of one third fresh air and two thirds recirculated air at designed conditions.

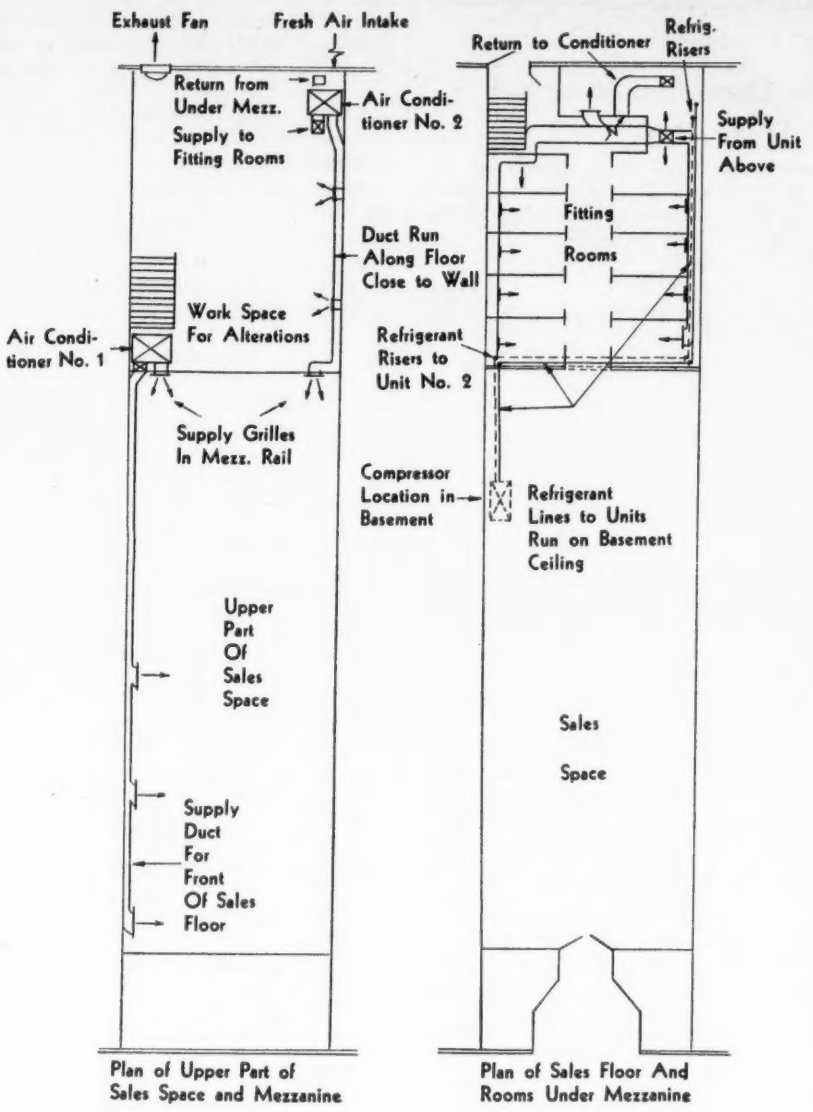
This unit will be of the standard type with direct-expansion cooling coils, steam-tempering coils, filters, and belt-driven blower. Unit No. 1 will have the same equipment with the exception of the tempering coils.

Since the same cooling effect will be required from each machine in B.t.u. output more cooling surface will be needed in Unit No. 1 than in Unit No. 2 as the latter has a higher design inlet temperature.

Next problem is that of connecting up these units with a refrigeration compressor. The compressor selected has an output of 120,000 B.t.u. at a 40° refrigerant temperature, and each conditioner has a capacity of approximately 60,000 B.t.u. at 42° gas temperature. These capacities are satisfactory to meet the cooling requirements already

(Concluded on Page 17, Column 1)

Women's Dress Shop Installation


Exhaust Fan
Fresh Air Intake
Return from Under Mezz.
Supply to Fitting Rooms
Air Conditioner No. 2
Return to Conditioner
Refrig. Risers
Supply From Unit Above
Fitting Rooms
Duct Run Along Floor Close to Wall
Air Conditioner No. 1
Work Space For Alterations
Refrigerant Risers to Unit No. 2
Supply Grilles In Mezz. Rail
Compressor Location in Basement
Refrigerant Lines to Units Run on Basement Ceiling
Upper Part Of Sales Space
Supply Duct For Front Of Sales Floor
Sales Space
Plan of Upper Part of Sales Space and Mezzanine
Plan of Sales Floor And Rooms Under Mezzanine

ANACONDA

ANACONDA COPPER REFRIGERATOR TUBES

MAKE the success of your installation jobs *more certain* by using these tubes from "copper headquarters". More than a century of manufacturing experience is behind the name "Anaconda".

The precision methods of The American Brass Company give these tubes the uniformity necessary for efficient installation. Each and every length of tube has the same *unusually bright, clean inside surface.* Manufactured according to A. S. T. M. specification B68-33.

Deoxidized. These quality tubes are 99.9% pure copper, deoxidized to increase corrosion-resistance and improve physical properties.

Unusually soft. Anaconda Copper Refrigeration Tubes are easy to bend and may be *flared without cracking.*

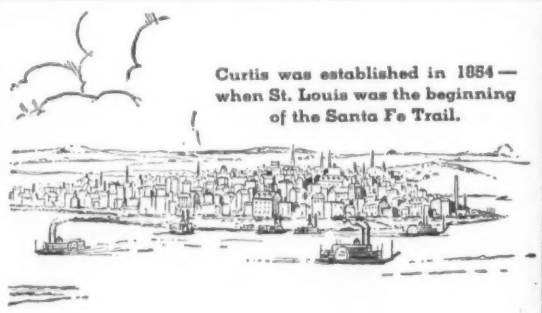
Anaconda Copper Refrigeration Tubes meet the leading refrigerator manufacturers' specifications in every way. They are carried in stock by distributors of refrigerator parts.

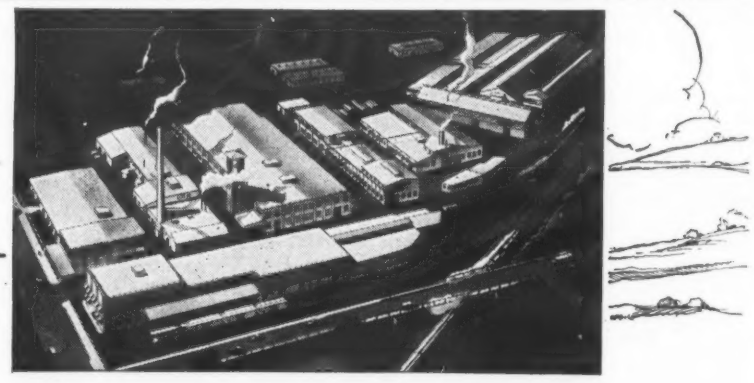
37474

FRENCH SMALL TUBE *Branch*

THE AMERICAN BRASS COMPANY · General Offices: Waterbury, Conn.

Offices and Agencies in Principal Cities. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario





20 ACRES of Modern Facilities . . .

● Curtis condensing units are produced in a comprehensive 20-acre plant, equipped with every modern engineering and production facility. They are the development of 83 years of designing and manufacturing experience, by an organization which established its name for reliability when Ulysses S. Grant was a wood-hauler on the streets of old St. Louis. That was 1854 — and from that beginning Curtis has reached the high and substantial place it now holds in the industry.

Eighty-six units comprise the Curtis line of today. Sizes range from 1/6 HP to 30 HP, with air-cooled and water-cooled models. Unit coolers and coils to match are always in stock.

Curtis units are built to meet definite requirements — not price levels. Quality is the first consideration — price comes after. That is why so many dealers and installation engineers insist on Curtis units for all jobs. Curtis reputation safeguards their own.

Ulysses S. Grant probably hauled wood past the first Curtis establishment.

CURTIS REFRIGERATING MACHINE COMPANY
Division of Curtis Manufacturing Co.
1912 KIENLEN AVENUE ST. LOUIS, MO.

Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ontario

CURTIS

Procedure in Sizing Refrigerant Lines

(*Concluded from Page 16, Column 5*)

calculated for this particular store.

With the compressor located in the basement refrigerant lines will have to be run up to each unit. The particular layout shown on the sketch indicates how a main liquid and suction line can be carried from the machine to the point where a riser is taken off for Unit No. 1 and then a reduced line is continued across the basement ceiling at the point where it rises to Unit No. 2.

In sizing these lines it must be borne in mind that there cannot be a pressure drop greater than the 2° difference between the conditioners and the compressor. Since the refrigerant used in this case is Freon the actual line pressure drop should not be greater then 2 pounds, this being about the equivalent of the 2° temperature differential.

The procedure for sizing the refrigerant lines is as follows:

(1) check the length of run of both the liquid and suction lines;

(2) check the allowable pressure drop between the evaporator and the compressor (this in most cases should not exceed 2 or 3 pounds per square inch pressure);

(3) note the volume of gas or liquid handled by the lines (this may be made simplified by using tables which base the sizes directly on B.t.u. capacity for definite refrigerants instead of having to convert to volumes and thence to velocities of refrigerant through the pipes);

(4) calculate the required pipe sizes to give the velocity that will be best suited to give the most economical pressure drop for each line (this will require consulting certain gas and liquid flow tables similar to those used for air flow in the sizing of ductwork but designed for the particular refrigerant being used).

This outline of the procedure is of course the general steps involved, but certain short cuts can be taken as mentioned and for this particular example we will refer directly to a chart from which we can select our pipe sizes readily without figuring the pipe areas and velocities. In future discussions we will consider in more detail the complete method as just outlined.

The actual length of run for the main suction line up to the point of the take-off for Unit No. 1 riser is 25 feet and by reference to a Freon Vapor Pressure Drop Chart we find that a 2-inch inside diameter pipe will handle the volume of gas in the suction line required for a 120,000 B.t.u. load with a pressure drop of approximately .5 pound per square inch taking into account the two elbows in the line.

The run over to Unit No. 2 is approximately 65 feet of pipe; a 1½-inch inside diameter suction line will give us about 1.3 pounds per square inch pressure drop in carrying the volume of gas to perform 6 tons of refrigeration. This will thus give us a total pressure drop in the suction lines from Unit No. 2 to the compressor of a little less than our maximum allowance of 2 pounds.

The run to Unit No. 1 is shorter but we cannot use a line smaller than 1½-inch inside diameter without exceeding the allowable pressure drop so we will select this size for the riser to this unit also.

The liquid lines will be sized in about the same manner and for the main line we will use ¾-inch inside diameter pipe and the longest branch will require a ⅝-inch inside diameter pipe while the shorter run to Unit No. 1 may be ½-inch I. D. The remainder of the balancing of the refrigerant flow will be left to the thermostatic expansion valves, as the load will naturally vary on each unit as conditions both inside and outside change.

The control of the system will be accomplished by a solenoid valve on each unit and a thermostat located in the zone conditioned by each.

This thermostat will operate a double-pole relay. One pole of this relay will control the solenoid valve in the liquid line to each unit, and the other pole will be connected with the refrigerating machine control circuit so that either thermostat may start the compressor.

In order to avoid frosting of the coil and excessive dehumidification due to the low refrigerant temperatures which would result if only one of the air conditioners were allowed to operate with the compressor, constant refrigerant pressure valves may be installed in the suction line to each conditioner, or some capacity-reducing device may be provided with the compressor for preventing low suction pressure by reducing its capacity when but one conditioner is in operation.

This capacity-reducing feature may be a reduction in motor speed or a "clearance pocket," or a partial bypass between the compressor discharge and suction lines. The standard arrangements discussed in previous chapters will be used for the control and the tempering of the fresh air.

General Electric First-Quarter Orders Up 78%

SCHENECTADY — Orders received by General Electric Co. for the first quarter of 1937 amounted to $105,747,030, compared with $59,569,879 for the corresponding quarter of 1936, an increase of 78%, reports President Gerard Swope. This was the largest first quarter in the history of the company. Dividend of 40 cents a share will be paid on April 26.

Hovey Takes on Westinghouse Line Exclusively

BOSTON—C. F. Hovey Co., department store, has dropped all other national brand refrigerator lines and will handle Westinghouse on an exclusive basis, as the sole Boston department store outlet. The arrangement became effective April 12.

Duncan Cameron to Retail Norge in Allentown

ALLENTOWN, Pa.—Duncan Cameron, electrical appliance retailer, has been appointed a Norge dealer here.

Lipman Introduces New Room Cooler Units in 2 Sizes

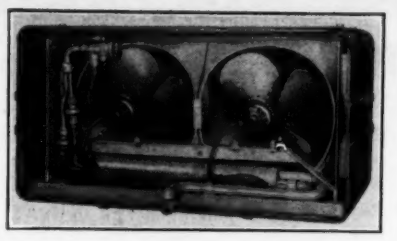
BELOIT, Wis.—Just introduced by General Refrigeration Sales Co. here are two new room cooler units designed for installation within the room as single units or as multiple units in larger rooms.

The larger size is double the smaller, using two fans where the smaller unit uses one. The line features compactness and simplicity of design, direct-connected disc-type fans being used. Models F116, M116, and W116 are the single-fan units for Freon, methyl chloride, and water respectively, while Models F216, M216, and W216 are the corresponding two-fan models.

General specifications follow:

Casing and Finish—Metal, with walnut brown body and modernistic stainless steel trim; furnished with prime coat only for field finish to harmonize with surroundings.

Lipman Unit Cooler



New unit cooler in the 216 series just introduced by General Refrigeration Sales Co.

Discharge Grille—"Uniflo" with optional direction of air stream.

Fan and Motor—Four-blade, 16-inch fan, direct-connected to ⅛₀-hp. three-speed motor, current characteristics optional.

Cooling Coil—Metallic-bonded copper fin and tube, arranged for cooling by water, or by direct expansion using Freon or methyl chloride.

Heat Exchanger—Furnished with direct expansion models for increasing unit capacity by sub-cooling liquid refrigerant, and for reducing suction line sweating by superheating suction gas with heat removed from liquid.

Refrigerant Feed—Through single thermostatic expansion valve.

Liquid Strainer—At expansion valve for protecting valve from dirt.

Electrical Connections—Six-foot rubber insulated cord with standard plug.

The manufacturer lists the capacities shown below with entering air at 80° F. dry bulb temperature and 50% relative humidity, offering average refrigerant temperature at 40° F. or entering water at 43° F.

Air Delivery

High Speed	Medium Speed	Low Speed
600 Cfm.	400 Cfm.	360 Cfm.
1,200 Cfm.	800 Cfm.	720 Cfm.

The above capacities are said to be based upon operation at high speed, with total capacities at 80% and 70% of maximum at medium and low speeds respectively.

Lipman Unit Cooler Dimensions and Weights

Models	Width In.	Height In.	Depth In.	Shipping Weight
116 Series	20⅝	20⅝	22⅝	145
216 Series	37 9/16	20⅝	22⅝	265

Copper Tube "Sweated" Connection Sizes

116 Series	1⅛ in. OD water	½ in. OD Liquid & ⅝ in. OD Suction
216 Series	1⅜ in. OD water	⅝ in. OD Liquid & 1⅜ in. OD Suction

Load Capacities

Models	Total Capacity	Sensible Capacity	Latent Capacity
116 Series	19,630 B.t.u./hr.	12,730 B.t.u./hr.	6,900 B.t.u./hr.
216 Series	39,250 B.t.u./hr.	25,450 B.t.u./hr.	13,800 B.t.u./hr.

Toridheet Oil-Burning Water Heater Put on Market

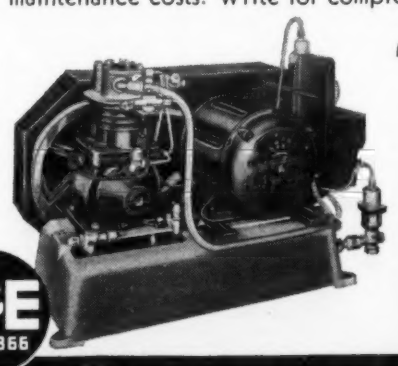
CLEVELAND — A new oil-burning water heater has been announced by Cleveland Steel Products Corp., manufacturer of Toridheet oil burners and air-conditioning equipment.

Completely automatic, the unit has a wide range of water temperature adjustments, and may be equipped with interchangeable burners for fuel oil, kerosene, or gas. It is available in standard round style or square cabinet model, and can be furnished in 20, 30, or 40 gallon capacities.

Fuel consumption on "high" fire is ⅛ gallon per hour; on "low" fire, ⅛₀ gallon per hour, the company claims. Average fuel consumption for a family of four is said to be approximately ¾ gallon per day.

Designed for
AIR CONDITIONING

Select from the complete line of M&E Compressor models *exact* units to meet *specific* air-conditioning requirements . . . modern, efficient compressors in which advanced engineering, exclusive features of construction, carefully selected materials and the finest of workmanship contribute to economy and dependability in operation and genuinely low service and maintenance costs. Write for complete catalog.



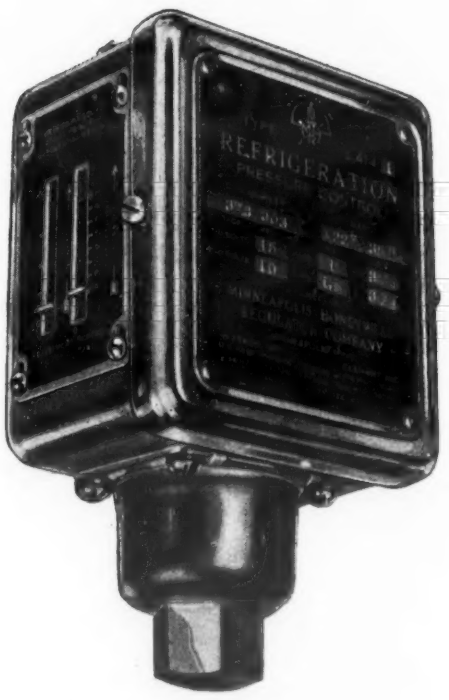
M & E Compressor Unit No. A—1125 W F
2 h.p. 2 cylinder compressor with water-cooled heads and continuous fin type counter-flow condenser . . . a highly dependable unit for small air conditioning jobs.

Complete line of Freon Compressors ½ to 20 h.p.

M&E EST. 1866

MERCHANT & EVANS CO., PHILA., PA. U.S.A.
Plant at Lancaster, Pa.

Added Features
Improved Performance
and
NEW LOW PRICES



INCREASED ratings. Closer differentials. New finish. New durability. Sealed construction. These are but a few of the new advantages now available in Minneapolis-Honeywell Refrigeration Controls, and they come to you at NEW LOW PRICES. Complete information on these startlingly new developments will be available shortly. Write for it. And remember, all these improvements, plus the same features that have made Minneapolis-Honeywell Refrigeration Controls outstanding, are now available at new low prices. Minneapolis-Honeywell Regulator Company, 2807 Fourth Avenue South, Minneapolis, Minnesota.

AUTOMATIC CONTROLS MH

MINNEAPOLIS-HONEYWELL
Control Systems
BROWN INDUSTRIAL INSTRUMENTS FOR INDICATING RECORDING AND CONTROLLING

COMMERCIAL REFRIGERATION SERVICE

Procedure for Testing Thermostatic Valves; Diaphragm-Type Expansion Valves

Chapter 7—Evaporators and Refrigerant Controls (Concluded)

BY K. M. NEWCUM

Often it is desirable to test a thermostatic expansion valve in the shop or on the job to determine if it leaks, and if so how much, or if the thermo bulb has lost its charge.

D. D. Wile of Detroit Lubricator Co. has outlined a very simple and practical procedure for field tests. It is as follows:

How to Test

It is quite a simple matter to make a complete and accurate test of these valves in the field. In most cases the regular service kit contains all of the necessary equipment. The equipment required is as follows:

1. Service drum full of Freon or methyl chloride (in the shop a supply of clean dry air at 75 to 100 lbs. pressure can be used in place of the service drum). The service drum is merely for the purpose of supplying pressure and for this reason the refrigerant used does not have to conform with the valve being tested; in other words, a drum of Freon would be perfectly satisfactory for testing with SO_2, methyl chloride, or Freon valves.

2. A high-pressure and low-pressure gauge. The low-pressure gauge should be accurate and should be in good condition so that the pointer does not have too much lost motion. The high-pressure gauge is not absolutely necessary but is recommended so as to show the pressure on the inlet of the valve.

3. Fittings and connections are required to complete the hookup as shown in Fig. 167.

4. Some finely crushed ice is necessary and one of the most convenient ways of carrying this around is to keep it in a thermos bottle. Otherwise a milk bottle or other container is satisfactory. Whatever the container is, it should be completely filled with crushed ice. Do not attempt to make this test with the container full of water and a little crushed ice floating around on top.

Procedure

1. Connect the valve up as shown with the low-pressure gauge screwed *loosely* into the adapter on the expansion valve outlet. The gauge is screwed up loosely so as to provide a small amount of leakage through the threads.

2. Insert the bulb in the crushed ice.

3. Open the valve on the service drum and be sure that the drum is warm enough to build up a pressure of at least 70 lbs. on the high pressure gauge connected in the line to the valve inlet.

4. The expansion valve can now be adjusted. The pressure on the outlet gauge should be different for various refrigerants as follows:

Freon	22 lbs.
Methyl chloride	15 lbs.
Sulphur dioxide	3 lbs.

Be sure to have a small amount of leakage through the gauge connection while making this adjustment.

5. Tap the body of the valve lightly with a small wrench in order to determine if the valve is smooth in operation. The needle of the gauge should not jump more than 1 lb.

6. Now screw the gauge up tight so as to stop the leakage through the threads and determine if the expansion valve closes off tightly. With a good valve, the pressure will increase a few pounds and then either stop or build up very slowly. With a leaking valve the pressure will build up rapidly until it equals the inlet pressure.

7. Again loosen the gauge so as to permit leakage through the threads and then remove the feeler bulb from the crushed ice and warm it up with your hand or by putting it in water at about room temperature. The pressure should increase rapidly showing that the power element has not lost its charge. If the pressure does not increase when this is done it is a sign that the power element is dead.

Note: With the new gas-charged expansion valves, the amount of charge in the power element is limited and the pressure will not build up above the specified pressure. This pressure is always marked on the power element and must be considered when testing gas-charged valves.

8. With high pressure showing on both gauges as outlined in the preceding paragraph, the valve can be tested to determine if the body bellows leaks. This should be done by loosening up the packing nut and using a Halide leak detector or soap suds to detect the escape of gas. When making this test it is important that the gauge and other fittings are screwed up tight so as to eliminate leakage at other points.

Precaution

1. Be sure that the service drum has liquid in it and is warm enough to build up sufficient pressure. The high-pressure gauge used as shown in the diagram will often save a lot of trouble because it will show when there is not enough pressure on the inlet side of the valve. During the winter time especially the service drum may become cold and develop insufficient pressure to make a satisfactory test.

2. Be sure that the thermos bottle or other container is full of finely crushed ice and does not have merely a little ice floating in the water.

Another very simple method of testing a thermostatic valve is to connect the inlet of the valve to the outlet of an inverted methyl chloride or Freon cylinder. (The reason for having the cylinder upside down is so liquid is drawn out.)

Place the thermo bulb so that any refrigerant flowing out of the expansion valve outlet will strike it.

Open the refrigerant cylinder valve and liquid refrigerant will flow from the outlet of the valve and contact the bulb. This liquid vaporizing on the bulb will cause it to become cold and shut off the flow. After a few minutes the bulb will again warm up, the valve will open, and the cycle will be repeated. The bulb may be heated by gripping it with the hand to hasten the opening of the valve.

By turning the adjusting nut, the valve may be checked over the whole range of adjustment.

If the valve does not pass liquid when the bulb is warm, it is either clogged up or the power element has lost its charge. If the valve does not close off when the bulb is extremely cold, it may be leaking at the needle and seat.

This leak may be caused by a small piece of carbon or dirt holding the needle off the seat. In such event, open the valve adjustment fully and grip the bulb in the handle. This will move the needle the farthest possible distance from the seat. Then open the cylinder valve and the sudden rush of liquid should remove any foreign particle from the needle and seat.

It seems needless to repeat that the great majority of thermostatic expansion valves returned to the factory as defective have nothing more wrong with them than a clogged strainer or valve opening.

Where a clogged valve is encountered in the field, it is obvious that the system is full of free carbon or dirt and a highly efficient filter should be installed in the liquid line to collect this foreign matter to prevent its reaching the expansion valve or valves.

Diaphragm Type Thermostatic Expansion Valves

The function, purpose and principle of the diaphragm valve is the same as the bellows type.

A type "TL" Alco thermo valve is shown in Fig. 168. It is typical of good diaphragm expansion valve design. The diaphragm cover or housing is welded to the valve body, thereby forming a hermetically sealed unit with the diaphragm separating the internal parts of the valve from the power element and thermo bulb assembly.

The pressure exerted in the bulb responds on the top of the diaphragm creating movement which is transmitted to the buffer plate and valve stem to open and close the valve.

The internal or evaporator pressure responds on the under or bottom side of the diaphragm. Note the drilling or opening at the right side of the stem. It is by way of this opening that the lowside pressure responds on the diaphragm, in the Alco valve, for as may be noted in the illustration, a molded die-cut packing is interposed between the diaphragm and spring chamber and the main (lower) part of the valve body. The purpose of this packing gland will be explained under "external equalizers."

Pressure exerted on the diaphragm by the increased pressure in the thermo bulb causes the diaphragm to flex or move downward slightly. This movement causes the valve stem or needle to leave the valve seat, allowing refrigerant to flow through the valve.

This type "TL" Alco valve is not adjustable from the outside and for that reason is known as an internal superheat adjusted valve.

To increase the flow through the valve, the adjusting nut immediately below the valve spring should be run downward, decreasing the pressure exerted by the spring and vice versa. This is accomplished by removing

(*Concluded on Page 19, Column 1*)

Commercial Refrigeration Service Manual Synopsis

In this issue is the conclusion of Chapter 7—"Evaporators & Refrigerant Controls"—of the MASTER COMMERCIAL REFRIGERATION SERVICE MANUAL. Chapters 3 through 7 of the COMMERCIAL MANUAL have been published in serial form in the issues of AIR CONDITIONING AND REFRIGERATION NEWS.

The MASTER COMMERCIAL REFRIGERATION SERVICE MANUAL was written by K. M. Newcum, author of the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, now being revised for a third edition.

Mr. Newcum has a wide and practical knowledge of refrigeration service problems. He has done actual service work in the field, supervised the service operations of a branch of one of the largest manufacturers in the industry, taught refrigeration service to classes of beginners, and has designed equipment to assist service men in their work. For more than 10 years he has been in constant touch with the problems and progress of refrigeration service.

In the first chapters of the COMMERCIAL MANUAL Mr. Newcum has dealt with the component parts of the commercial refrigeration system, explaining how each operates and some of the service problems that may grow out of the failure of these parts to function properly.

After rounding out this information on the component parts, Mr. Newcum in later chapters will discuss in considerable detail the proper methods of installing and servicing commercial refrigeration equipment of all kinds.

A summary of the previous instalments of the COMMERCIAL MANUAL published in issues of the NEWS is as follows:

Chapter 3, Cylinders, Valves, and Safety Devices for Refrigerants—Aug. 5, 12, and 19.

Chapter 4, Methods of Transferring Refrigerants to Smaller Cylinders—Aug. 19.

Chapter 5, Drying of Refrigerants—Aug. 26.

Chapter 6, Commercial Condensing Units—Sept. 2, 9, 16, 23, 30; Oct. 21; Nov. 4, 11, 18, 25; Dec. 2, 9, and 16.

Chapter 7, Evaporators and Refrigerant Control Valves—Dec. 23, 30; Jan. 6, 13, 20, 27; Feb. 3, 10, 24; March 3, 10, 17, 24, 31; April 7, 14, and 21.

Valve Testing Equipment

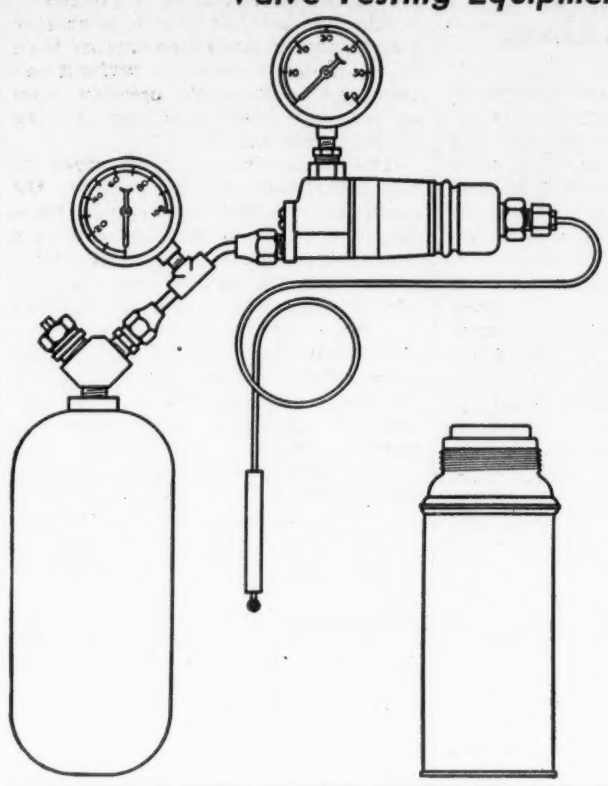


Fig. 167—Equipment used in testing of thermostatic expansion valves.

Alco Diaphragm Thermostatic Valves

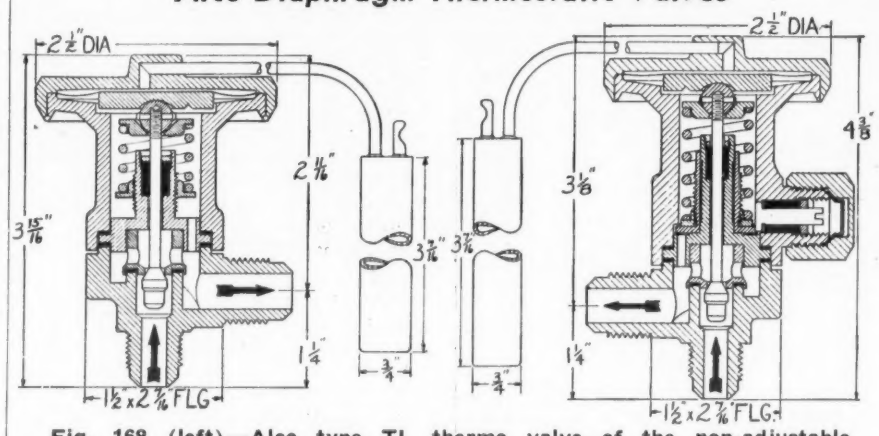


Fig. 168 (left)—Alco type TL thermo valve of the non-adjustable diaphragm expansion type. Fig. 169 (right) is similar but is externally adjustable.

Twin Refrigerants
INSTANTLY AVAILABLE
EXTRA DRY ESOTOO
V-METH-L

Add to this important feature the most rigorous testing and re-testing of each shipment of ESOTOO and V-METH-L before delivery . . . the up-to-dateness of our large staff of trained technical men . . . the finest equipment money can buy . . . and you can readily understand the unqualified approval given these fine refrigerants by the refrigeration and air-conditioning industry.

We all know how important **complete dryness** is in a refrigerant. Virginia Smelting has spent many years and thousands of dollars in perfecting a process whereby such dryness is achieved that ESOTOO and V-METH-L contain less than 0.0030% moisture.

If you have a particular refrigerating or air-conditioning problem on which you would like assistance, a letter will enlist the aid of our experts.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

ANY TIME

ANY WHERE

You're always near a source of

Artic
REG. U. S. PAT. OFF.

(DU PONT METHYL CHLORIDE)

Prompt delivery in 20-, 60-, 90-, or 130-lb. cylinders from adequate stocks in principal cities.

DU PONT

E. I. Du Pont de Nemours & Co., Inc.
THE R. & H. CHEMICALS DEPT.
Wilmington, Delaware

ARTIC—*the preferred Methyl Chloride for Service Work*

BRUNNER

Send for the New
REFRIGERATION CATALOG
Five Models of Compressors
Forty-seven Models of Condensing Units from ¼ H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y., U. S. A.

Thermo Valves by Peerless and Automatic Products

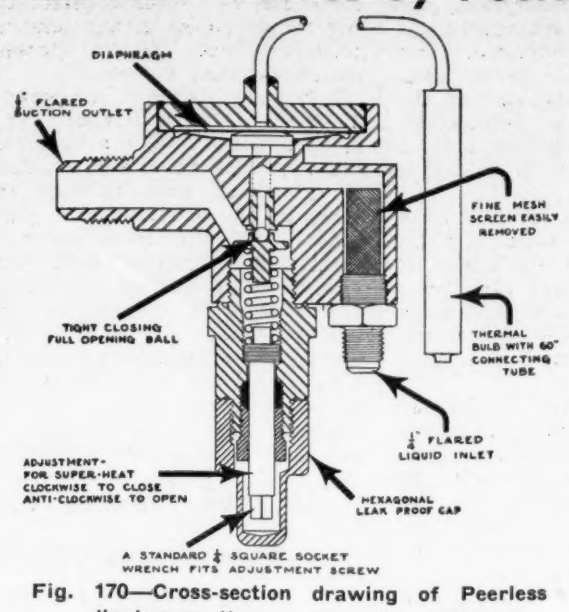

DIAPHRAGM
FLARED SUCTION OUTLET
FINE MESH SCREEN EASILY REMOVED
TIGHT CLOSING FULL OPENING BALL
THERMAL BULB WITH 60" CONNECTING TUBE
FLARED LIQUID INLET
ADJUSTMENT FOR SUPER-HEAT CLOCKWISE TO CLOSE ANTI-CLOCKWISE TO OPEN
HEXAGONAL LEAK PROOF CAP
A STANDARD SQUARE SOCKET WRENCH FITS ADJUSTMENT SCREW

Fig. 170—Cross-section drawing of Peerless diaphragm thermo expansion valve.

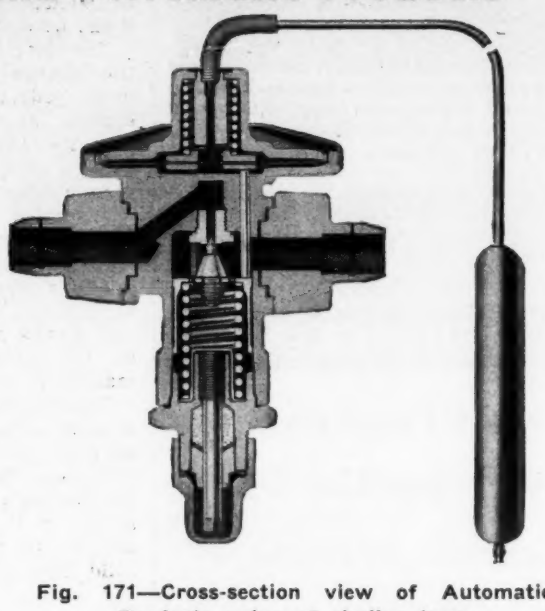


Fig. 171—Cross-section view of Automatic Products valve of similar type.

Construction of Diaphragm-Type Thermo Valves

(*Concluded from Page 18, Column 5*)

the two flange bolts and taking the valve apart. Separating the lower part releases the valve cage (see Fig. 168) which contains all the internal working parts.

Alco type "TCL" thermo valve (Fig. 169) is provided with an external adjustment. It may be noted on the right hand side of the valve. The adjusting screw is made accessible by removing the seal cap. This cap should always be securely tightened back into place when an adjustment has been completed, to prevent possible leakage through the packing at this point.

Like type "TL," the valve cage is removable and replacable by separating the valve body.

A cross-sectional view of the Peerless diaphragm thermo expansion valve is shown in Fig. 170.

Take special notice of the adjustment procedure. To open the valve wider turn adjustment stem counter clockwise (to the left) and vice versa. Attention is called to this feature, namely, because it is just the reverse of standard practice and has often resulted in turning the adjustment stem the wrong way.

The Peerless valve, as may be noted, employs a ball-type seat. Although not shown in the cross sectional view (Fig. 170), the Peerless valve has a drilling or orifice between the outlet side of the valve and the diaphragm chamber providing ready response of any lowside pressure changes on the under side of the diaphragm.

The thermo bulb is of the so-called semi-liquid charged type. Like most diaphragm valves, it is charged with a sufficient amount of refrigerant so that if, in event of an unusual application, the valve body, especially the power element (diaphragm), is maintained at a lower temperature than the thermo bulb, the entire chamber above the diaphragm may fill up with liquid from the bulb, but because of the relatively small space above the diaphragm, and the large amount of liquid in the bulb, the valve will still function properly.

The reason this is possible is due to the fact that the bulb contains sufficient liquid to fill the tube and power element and still have enough left over to have liquid or saturated vapor present in the bulb to respond to the superheat changes at the bulb location.

Locating this type of valve in a colder space than the bulb is not necessarily recommended, but certain applications may make such a valve location necessary.

The Automatic Products diaphragm thermostatic expansion valve is shown in Fig. 171.

All different makes of expansion valves have individual features and space does not allow all the valves, their features, etc., to be illustrated or discussed.

The service man should choose the valve he desires to use and obtain type and the other detailed information on application, adjustment, size and type and the other important information either from his supply house or direct from the manufacturer.

Expansion valves are one part of a refrigeration system that requires specialized knowledge. Every manufacturer maintains not only laboratories for testing, but also for determining by scientific research correct application for individual and difficult installations and these manufacturers are eager to supply any reasonable amount of accurate and valuable data on their valves to service men merely for the asking.

One point a service man must not overlook is that these manufacturers are reliable and responsible people. Your problems are their problems. They want to help you reduce your service expense by properly using the equipment they supply. Do not be too hasty in condemning their product or the information they supply. The real trouble may be in your lack of information or knowledge on just how a certain type of valve may be designed and intended to work.

Take your problems up with your manufacturer. Supply the manufacturer with complete and authentic information when corresponding or conversing with them. This is important.

External Equalizer Connections

The fact having been established that the thermo valve operates on the difference between the temperature at the bulb location and evaporator inlet or, in other words, the degree of superheat, brings up another important point.

As described, the function of the valve is positive and regular, providing there is no appreciable pressure drop through the evaporator. In other words, where the pressure at the inlet and outlet of the evaporator is the same during the operating period, the standard thermo valve will function perfectly.

If, however, the evaporator is so designed that it offers restriction to the normal flow of refrigerant thus resulting in an appreciable pressure drop between the inlet and outlet, even with the correct expansion valve superheat adjustment the action of the valve may be irregular.

This may be explained as follows:

Note Alco valve types "TL" and "TCL" Figs. 168 and 169. They both have an opening between the valve outlet and the diaphragm chamber. This is known as an internal equalizing port, so that the true suction pressure at the inlet of the evaporator may immediately respond on the diaphragms.

If there is no excessive pressure drop in the evaporator, then the true suction pressure of the entire evaporator responds through this internal equalizer on the diaphragm. (A pressure drop of up to approximately four pounds is allowable with most valves.)

However, if the pressure drop is excessive, the pressure at the outlet of the evaporator may be much higher than at the inlet, materially affecting the normal operation of the valve. The effect is that the higher pressure at the inlet is acting against the diaphragm attempting to hold the valve closed, thereby requiring a much higher superheat adjustment than should normally be required.

To overcome this condition, for example, Alco eliminates the internal equalizing port by inserting a fitting in the valve body in the diaphragm area, provide for an external equalizing tube. A small tube is connected from this connection to the outlet of the evaporator.

This external equalizing assembly, as noted in Fig. 172, allows the pressure at the tail end of the evaporator to respond on the diaphragm, thus providing a true pressure response on the diaphragms based on the pressure at the outlet of the evaporator.

External Equalizer

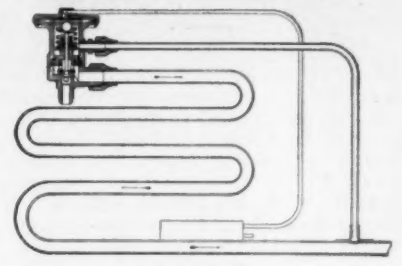


Fig. 172—External equalizing assembly.

Most all valve manufacturers provide this external equaling connection on larger size valves and have certain recommended applications for its use.

It is not considered necessary on small standard commercial evaporators as the pressure drop through the coil is generally below the allowable limit.

However, when the footage of coil runs up as it will in larger commercial evaporators, it is well to consult the coil or valve manufacturer as to the advisability of using an external equaling connection.

It is considered standard practice on large high capacity air-condition evaporators, where top performance is entirely necessary under all conditions.

Where the external equalizer is employed by means of a packing, the outlet side of the valve is removed from the diaphragm or bellows area, thereby making it impossible for the pressure at the valve to respond on the diaphragm or bellows.

TIME TESTED
No. 250 CONTROL SWITCH

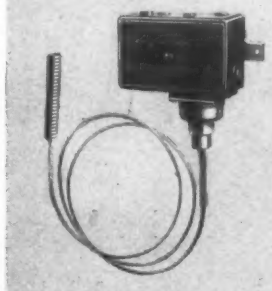
There is a model available for each type of system and each set of conditions. Operating ranges run from 20" vacuum to 180 lbs. pressure, or from −30° F. to 72° F. temperature. The differential or running cycle may be readily adjusted to whatever set points you prefer. Once set, the No. 250 retains its adjustment until it is changed. This switch rated at 1 H.P. is accurate, constructed for long service, and easily installed. Convenient terminals for direct BX connection avoid the necessity for a terminal box.

ASK FOR TECHNICAL BULLETIN No. 60

DETROIT LUBRICATOR COMPANY
DETROIT, MICHIGAN, U. S. A. • 5900 TRUMBULL AVE.
NEW YORK, N. Y.—40 West 40th St. • CHICAGO, ILL.—816 South Michigan Ave.
Division of American Radiator & Standard Sanitary Corporation
Canadian Representative—Railway and Engineering Specialties Ltd., Montreal, Toronto, Winnipeg

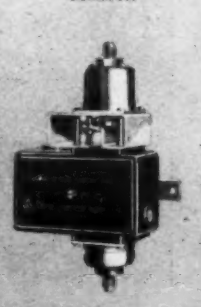
Model RB-3 for suction line pressure control. Model RB-5 for high pressure cut-out.

Model RL-1 controls air, water or brine temperatures—widely used for ice cream cabinets, meat boxes, water coolers, milk coolers, display cases, florist boxes, etc.



Model RN-1 controls temperature of air or gas—has coil type bulb for sensitive control.

Model RS for temperature control of boxes where the switch must be located within the box. Model RT used in place of Model RS where extremely close control is required.



Model RIBA controls from suction line pressure and also incorporates a high pressure cut-out.

Model RIBL for temperature control in combination with high pressure cut-out.

FOR DRYING Air Refrigerants Industrial Gases

USE DRIERITE Anhydrous Calcium Sulfate

SOLIDS-LIQUIDS-GASES-SOLIDS-LIQUIDS-GASES-SOLIDS

Not Only RATED HIGHLY EFFICIENT
(B of S. Jour. of Res., Feb., 1934, R.P. No. 649)

But also

NEUTRAL — NON-WETTING
STABLE — NON-POISONOUS
CONSTANT IN VOLUME — NON-CORROSIVE
INERT EXCEPT TOWARD WATER — NON-DISINTEGRATING
INSOLUBLE IN ORGANIC LIQUIDS AND REFRIGERANTS
REGENERATIVE CAPACITY OF SEVERAL HUNDRED CYCLES

DRIERITE is the Ideal Drier for drying out Refrigerating Systems or for Maintaining a Water-Free Condition in Sealed Units. Dries all Refrigerants—Sulphur Dioxide, Methyl Chloride, Freon, Ammonia, etc. May be installed in Either Liquid or Gas Side. Efficient and Rapid in Action in Dehydrators. Regenerative Compartment Desiccators Available for Use in Cabinets, Vaults, or Other Closed Compartments. Special Perforated Unit for Use in Double Glazed Windows.

Granule Sizes: 2, 4, 6, 8, and minus 20 Mesh. Larger Sizes Available if Required.
Unit Packages: 1-Lb.; 2-Lb.; 5-Lb.; 25-Lb. Cans; 100 Lb. Drums.
Our Policy: To serve the Refrigeration and Air Conditioning Industries Directly, Promptly, Carefully. Our Product was not offered to the trade until its Efficiency had been Verified and its Performance Established in Actual Service.

Write for Literature and Quotations

W. A. HAMMOND, YELLOW SPRINGS, OHIO

Boag Heads New National Dehydrating Association

COLUMBUS, Ohio—Dr. C. Wesley Boag of Heil Co., Milwaukee, has been elected president of the newly organized National Dehydrating Association, comprised of manufacturers and users of dehydrating equipment. J. H. Fulmer of Nazareth, Pa., was named vice president, and L. H. Moulten of Erie, Pa., secretary-treasurer.

Despatch Oven Fills 2 Rush Orders on 3-Day Notice

MINNEAPOLIS—On but three day's notice, Despatch Oven Co. recently filled rush orders for gas-fired dehydrating ovens for use of two service companies, Mechanical Refrigeration Supply Co., Huntington, W. Va., and Mechanical Refrigeration Service Co., Portsmouth, Ohio, in repairing refrigerating equipment in the flood areas.

The ovens, 8 feet high, 3 feet wide, and 3 feet deep, are of larger capacity than those stocked by Despatch for immediate shipment, and had to be fabricated to order.

Ordered by telegram Jan. 30, shipment of the two ovens went forward Feb. 2, with less than three days for actual production time, Despatch officials state.

Eschelman's Merges with Lehigh Valley Supply Co.

ALLENTOWN, Pa. — Eschelman's Refrigeration Service Co., 10-year-old local service company, has been merged with the refrigeration service department of Lehigh Valley Supply Co. J. N. Eschelman will be in charge of service and installation work.

don't blame Joe!

MOISTURE-CLOGGED EVAPORATOR

VALVES AREN'T HIS FAULT

Frying the hide of a good service man doesn't help any when valves are clogged. Moisture may be in every refrigeration unit. Baking at the factory may fail to get it all out, because intricate passages trap the moisture.

Activated Alumina provides the sensible solution. It *adsorbs* moisture, and removes the last trouble-making trace of this vapor. When valves clog, a convenient cartridge of Activated Alumina, temporarily inserted in the system, quickly and inexpensively removes the moisture. Such cartridges are available from several makers. Certain refrigerators are permanently equipped with Activated Alumina cartridges as cheap insurance against need for service. ALUMINUM ORE COMPANY. *Sales Agent:* ALUMINUM COMPANY OF AMERICA, Pittsburgh, Pa.

ALORCO

ACTIVATED ALUMINA

PREVENTS CLOGGED REFRIGERATOR VALVES

Bonney Tool & Forge Issues New Pocket-Size Catalog

ALLENTOWN, Pa.—Bonney Forge & Tool Works has just issued a new pocket-size catalog, No. 137, covering its complete line of hand tools.

The 64-page book illustrates and describes in detail the line of Bonney automotive sockets and wrenches, special sockets and tools for electric refrigeration service work, and its full line of punches, chisels, pliers, screw drivers, and hammers.

Solar Mfg. Corp. Takes Lease On Bayonne Factory

BAYONNE, N. J.—Solar Mfg. Corp., New York manufacturer of capacitors and condensers for electric motors has acquired a long-term lease, with option to purchase, on the former S. J. Aronsohn Silk Mill here, according to Otto Paschkes, Solar president.

Following extensive alterations and repairs to the newly acquired plant, the company will move here in time to begin operations by June 1, Mr. Paschkes said.

INFORMATION FOR SERVICE MEN

W. A. Hammond Describes Properties of Drierite and Explains Proper Use in Dehydrating Refrigeration Systems

By W. A. Hammond, The Drierite Co.

DRIERITE is a specially prepared form of anhydrous calcium sulfate of high purity. It is prepared in the forms of a coarse powder and a number of classified granule sizes.

The forms commonly used in the refrigeration industry are the 4-mesh, 6-mesh, and 8-mesh, and blends of these sizes. However, 2-mesh (½ inch), 1-mesh (1 inch), and even larger sizes are available.

The granules contain 38% by volume of capillary pore space, and in addition Drierite has a strong chemical affinity for water. The drying action of Drierite, therefore, combines a chemical action forming a definite hydrate, and the powerful capillary attraction of the molecular-sized pores.

Drierite may be used for the efficient drying of a wide variety of materials—solids, liquids, and gases. As a drying agent, it has the following desirable chemical and physical properties.

It is neutral in reaction—neither acid nor alkaline—and may therefore be used to dry sulphur dioxide, ammonia, and all other refrigerants.

It is entirely inert and inactive except toward water. It does not decompose, is not inflammable, and does not injure delicate materials by contact.

It is not soluble in nor chemically active toward the common refrigerants and organic liquids.

Drierite dries refrigerants either in the liquid or vapor phase, that is, it is effective on either the liquid or suction side of the system.

It does not shrink, expand, nor disintegrate in service. It does not become wet by nor dissolve in the water it absorbs. It is said to be non-corrosive, odorless, tasteless, and non-poisonous.

It maintains its efficiency at temperatures up to 150 to 190° F., and becomes appreciably lower in efficiency above 212° F.

Drierite may be regenerated for repeated use merely by heating in an oven about two hours at 375 to 400° F. Regeneration is not feasible if the sample is contaminated with oil, dust, or other foreign matter.

The efficiency of Drierite has been checked by the National Bureau of Standards in an exhaustive study of the comparative efficiencies of various dehydrating agents. In the report on this survey (Journal of Research, vol. 12, pages 241 to 248, February, 1934) Drierite (anhydrous calcium sulfate) was rated fourth in the list of 15 commercial drying agents, considering efficiency alone, and without regard to other desirable properties.

The moisture remaining in a gas or vapor after drying with Drierite has been found to amount to only 5 millionths of one gram per liter (1.06 quarts), or only 0.31 of one pound per million cubic feet.

Drierite is perfectly adapted to use by the method commonly employed in the drying of gases and liquids—that of passing the gas or liquid through a bed or column of the granular drier contained in the tube, tower, or cartridge of suitable design.

Such units, especially designed for the drying of refrigerants and adapted to use in either the liquid or suction side of the system, are made by a number of manufacturers.

The size of the dehydrator, and the charge of Drierite to be used, is in proportion to the size of the system or amount of refrigerant. For the average household unit, a charge of a least 6 to 8 ounces is recommended.

The most widely used granule sizes are the 4-mesh and 6-mesh. A number of manufacturers use blends of 4 and 6-mesh, and some use blends of 4, 6 and 8-mesh. All of these sizes and blends are available. One pound of the granules occupies approximately 31 cubic inches.

The dehydrator should be charged in a vertical position so as to secure an even and uniform packing of the granules. The unit as furnished by the manufacturer includes suitable filters or screens at the ends of the column to prevent particles of the solid from entering the line.

A common practice in assembling a system is the "baking out" of parts or all of the circuit. Merely heating a system of coils, valves, and compartments is not sufficient to remove water vapor. When such a system containing water is heated, the water is merely converted to steam.

Unless this steam is actually blown out while hot with a dry gas, it recondenses when the system cools and thus remains in the circuit to cause mischief.

During the baking-out process the circuit should be connected with a drying column or dehydrator and a thoroughly dried gas passed slowly through the circuit to sweep out all water vapor.

The problem of drying or humidity control arises in connection with a great variety of closed compartments, such as storage cabinets or rooms, safes, vaults, tool chests, display cases, etc. By using a granular, non-wetting, regenerative drier such as Drierite, a dry atmosphere may easily be maintained in any enclosure.

The compartment desiccator is a unit, 2½x18 inches, made of cadmium-plated steel with 3/16-inch perforations, and is designed for large cabinets. It holds 3 lbs. of 2-mesh Drierite, sufficient for a volume of 100 to 200 cubic feet. It may be regenerated many times.

Use of double glazed windows in the construction of refrigerated display cases and other large units is common. If the space between the two glasses is not maintained in a dry condition, condensation and frosting in this space result. The Drierite unit prepared to solve this problem is ½x½x6 inches. It is finished in dull black iron with 3/32-inch perforations, and can be placed in any convenient position between the two glasses of the display case window.

Indicating Drierite, prepared in the 8-mesh size, is intended for use in glass units to give a visual indication of absorption and exhaustion. It is widely used to test small amounts of moisture in a gas or vapor. This form, made by impregnating the granule with cobalt chloride, is a distinct blue in color and changes to a rose red as it absorbs water. It is not recommended for use in drying refrigerants without preliminary tests to prove its applicability in any particular case.

Dr. Hill Named to Executive Post At R.A.C.I.

CHICAGO—Appointment of Dr. E. Vernon Hill to the newly created post of director of research and education for Refrigeration and Air Conditioning Institute has been announced by Ray D. Smith, president.

Dr. Hill, who assumed his new duties April 1, will be in charge of outlining, coordinating, and supervising the preparation of all lesson assignments used in the home-study section of the Institute's training, and the working out of routines to be followed when the students come to Chicago for the final shop training.

In addition, he will contact educational institutions, research laboratories, and engineering departments of refrigeration and air-conditioning manufacturers.

A former chief of the ventilation division of the Chicago Department of Health, and later head of the department's sanitary bureau, Dr. Hill resigned in 1922 to enter private engineering practice as a heating, ventilating, and air-conditioning consultant, and has since that time been chiefly concerned with this work.

He is the inventor of the synthetic air chart, used for determining the properties of conditioned air on a percentage basis, adopted as a standard by American Society of Heating & Ventilating Engineers in 1920; the direct vision dust counter; the Hill psychrometric chart, and a line of portable air testing instruments.

Dr. Hill was president of the Chicago Commission on Ventilation in 1918; president of the Illinois chapter of A.S.H.V.E. in 1919, and national president of the society in 1920.

Author of "Aerology for Amateurs and Others" and "The A.C.E. Handbook," Dr. Hill for several years was editor of the *Aerologist* magazine.

Hammond Bldg. & Supply To Retail Electrolux

HAMMOND, La.—Hammond Building & Supply Co. has been appointed Electrolux dealer here. Buford Thames is proprietor of the company.

Thinner Walls WON'T DO!

The minimum wall thickness of Copper Tubing for Domestic Refrigeration is .035 (20 Stubs gauge)".

Actual Outside Diameter	Wall Gage
1/8"	.035
3/16"	.035
1/4"	.035
5/16"	.035
3/8"	.035
7/16"	.035
1/2"	.035
5/8"	.035
3/4"	.035

So say some of the most important Manufacturers of Domestic Refrigeration, their installation and service men. Thinner walls will not fill their requirements nor will most city codes permit a thinner wall than .035.

This portion of a page from our price book proves that Wolverine Copper Tubing has ample Wall Thickness!

When you buy Copper Tubing be sure you specify Wolverine. It is stamped with a small "W" at regular intervals on each length. Each end is solder sealed with the familiar "W". These two marks identify Wolverine Copper Tubing:—the standard of the refrigeration industry.

Wolverine Copper Tube is made to A.S.T.M. Specifications B68-33 with FULL wall thickness .035 (20 Stubs gauge).

Made from 99.9% pure electrolytic copper by approved methods.

Uniformly soft for easy cutting, flaring and bending.

Mirror-clean, bright annealed inside surface.

Made clean, *sealed* clean, *delivered* clean.

ASK YOUR JOBBER

He has a complete stock of Wolverine Copper Tubing for refrigeration and also Type K, L, and M for Air Conditioning.

WOLVERINE TUBE COMPANY

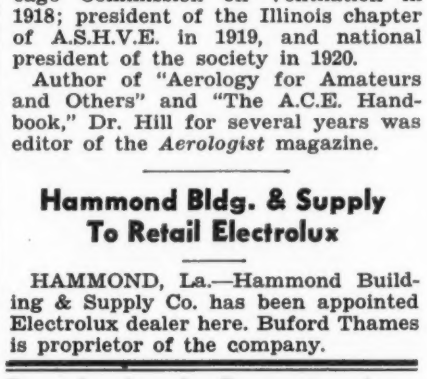
1411 CENTRAL, DETROIT—Sales Offices in Major Cities

Provide Ample Protection from

FUMES

The serviceman should always take along the

CESCO HEALTHGUARD FUME KIT



LEAKS of refrigerants may be encountered at any time. No man should work in these fumes, even though the concentration be light and the time brief. It is *important* to be *ready* for them. The HEALTHGUARD FUME KIT is handy to take along—light, compact and surprisingly comfortable to wear. Cartridges for methyl chloride, sulphur dioxide and ammonia. Write for literature.

CHICAGO EYE SHIELD CO.

2352 Warren Blvd. CHICAGO, ILLINOIS

Problems of Selling Air Conditioning Considered at Wisconsin Conference

(*Concluded from Page 1, Column 1*)

Efficiency of equipment is already high and can not be expected to be improved more than 5 or 10% at most.

"The installed cost of an individual unit to cool a moderate size room adequately may eventually be brought down to as low as $250 or $300, but that is all," Mr. Carrier said. "Less than adequate cooling may possibly be produced at a lower price than this."

Mr. Carrier's address was delivered during the evening of the second conference day. B. G. Elliott, professor of mechanical engineering at the university, presided over the opening session and Mr. Larson discussed the human element in air-conditioning installations.

Taking university gatherings as examples, Mr. Larson reported that the first dance at the junior prom raises the room temperature 10°, while an audience of 13,500 persons to witness a boxing match in the university field house on a 36° night generates 4½ times as much heat as the building loses—and gives off 1,055 gallons of moisture an hour.

"The human body," Prof. Larson said, "is a power plant with an exacting heat balance. It has a more intricate temperature control system than any yet developed in industry." That control system, he explained, must keep the bodily temperature at 98.6°.

He explained air-conditioning problems in righting unbalanced conditions of temperature and humidity caused by individuals within the conditioned area.

INSTALMENT SELLING URGED

Development of plans for sale of air conditioning and automatic heating on time payments was urged by S. M. Zinner, vice president of Walter E. Heller Co., Chicago commercial banking firm.

"I can think of no other products which lend themselves so well to instalment selling as those which you are handling," Mr. Zinner said. "To a greater degree than most others they effect economies in operation, contribute to increased volume of business where a commercial installation is concerned, and certainly to the comfort of the buyer or his customers to a very marked degree.

"In many commercial installations, this factor of economy and increased volume can be reasonably expected to actually create in savings or additional income a larger amount than the buyer is required to lay out in the monthly obligation he assumes.

ECONOMY ARGUMENT

"What better argument could there possibly be for buying on an instalment basis than the fact that the articles purchased actually pay for themselves? Thousands of prospects could not even be considered meager suspects if the privilege of buying heating and air-conditioning equipment on instalments were not available to them."

Individuals or businesses are actuated to buy "on time" because they wish to enjoy now the benefits of the desired commodity without waiting until sufficient free cash has been accumulated or until other more urgent necessity for selling on credit or deferred payments increases in proportion to the cost of the article in question, the speaker declared. Air-conditioning and automatic heating installations represent a larger investment than any other single article that contributes to the comfort or well-being of the occupants of a home or other structure.

BREAKING RESISTANCE

"Every salesman knows one of the primary causes of sales resistance is the prospect's inevitable mental reaction, 'How am I going to pay for it?'" Mr. Zinner continued. "He knows also that this particular resistance is present in proportion to the relative selling price of his commodity—hence the exceptional importance of proper understanding and use of the instalment idea to your industry if you are to get your share of what is spoken of as the 'consumer dollar.'

"Keep in mind that your competition consists not only of other manufacturers and purveyors of articles similar to yours, but also manufacturers and purveyors of totally dissimilar articles, who are lying awake nights to devise ways of enticing these consumer dollars into their 'tills' and away from yours."

Rather than to be looked on as a necessary evil to be kept hidden and brought to the surface only under duress, or upon urgent demand, instalment selling should be intensively used as a constructive force in installing confidence in the mind of the prospect, reducing sales resistance, and closing sales, Mr. Zinner maintained.

A PRODUCT GUARANTEE

"Salesmen can be shown that, properly presented, your instalment plan will minimize or eliminate as nothing else that primary sales resistance in every buyer's mind, 'What am I going to use for money?' or 'How can I pay for this article I want so badly?' Also, that the mere offer of payments over a long term is convincing evidence that the product will perform in accordance with the claims you have made for it.

"Thus used, your instalment plan can be made a real weapon to make more closures in proportion to sales calls. In other words, with the same effort make two sales where only one was made before."

In installations where labor represents a large part of the total cost and the repossessable value is thereby considerably lowered, a down payment sufficient to cover such items was suggested as one means of eliminating losses in instalment selling. Careful investigation of a prospect's standing, with emphasis upon his bill-paying habits rather than his material worth, was also stressed by Mr. Zinner.

YEAR-AROUND SELLING

"Selling Year-Around Air Conditioning—Not Seasonal" was discussed by D. W. McLenegan, assistant engineer of the air-conditioning division, General Electric Co., Bloomington, N. J. Mr. McLenegan stressed selection of equipment when seasonal air conditioning was ordered so that duplication and replacement would be avoided to as great a degree as possible when a seasonal unit was to be converted to a year-around installation. He illustrated his discussion by slides showing equipment capable of conversion.

The speaker traced primary steps leading to year-around air conditioning: regulating existing heating plants, installation of circulating fans, addition of humidity control equipment for winter use, use of filters in purifying incoming air, installation of a complete summer or winter conditioning unit and, finally, broadening that unit to provide a year-around system.

Whenever a step is taken in such a progressive installation, care should be taken in the selection of equipment and in its installation to eliminate unwarranted expense when the next addition is to be made, thereby eliminating unnecessary delays before the buyer is financially able to take the next step and eventually enjoy the benefits of complete year-around air conditioning, Mr. McLenegan pointed out.

PARTIAL STEPS

He stressed the importance of using circulating fans, humidity control equipment, and regulators on existing heating systems as means of interesting a prospect in air control and eventually selling him on year-around conditioning.

Mr. McLenegan warned against under-estimating the size of cooling units to properly air condition a job. He said that where a 3-ton unit would give 15° cooling in a well-insulated 8-room house, a 1-ton unit will not give 5° cooling on the same job.

AIR DISTRIBUTION

V. M. Lathers, sales engineer of Barber-Colman Co., Rockford, Ill., supplemented a discussion of "Air Distribution In Air Conditioning Systems" with lantern slides graphically showing the importance of grille location. Smoke bombs were used to trace the air flow in the illustrations presented.

The tests showed advantages of locating the outlets and returns on the same wall to avoid spotty conditions in the room's air flow. Outlets should deliver air at a sufficient speed to prevent a break or dumping before the fresh air stream crosses the room if proper distribution of new air and the air in the room is to be obtained.

Smooth ceilings are of value in carrying the cool air stream across the full length of the room, Mr. Lathers pointed out.

Various designs and type of grilles designed to perform special jobs were illustrated. The discussion following Mr. Lathers' talk revealed work being done by various manufacturers on the subject of air distribution.

FILTER EFFICIENCY

A discussion of tests to determine the efficiency of various filters for air-conditioning systems was delivered by F. B. Rowley, director of the experimental laboratories at the University of Minnesota and a past president of the ASH&VE.

Methods thus far evolved for the separation of gases from air are unsatisfactory for use in air-conditioning systems, Mr. Rowley said, making it necessary to replace the air taken from a room where undesirable gases have become mixed with it and replacing with fresh air.

Tests of both dry and viscous coated filters point out their inability to maintain maximum efficiency for a long period. Dry filters, Mr. Rowley pointed out, were very efficient at low air speeds, but quickly lost their efficiency in faster air currents.

Viscous coated filters, while their efficiency ratings were not as high, had longer life than many of the dry filters. The testing method employed was not entirely fair to viscous coated filters as the oil was not given an opportunity to soak through the dust and gather more during the period of the test, it was explained.

Exhibitors were:

Advance Appliance Co., Peoria, Ill. (Stoker-Ola stoker); Anchor Stove & Range Co., New Albany, Ind. (Anchor-Arco Kolstoker-Boiler units and Anchor Kolstoker); Automatic Stoker Corp., Milwaukee (Conco stoker and Weyher appliance distributor); Barber-Colman Co., Rockford, Ill. (control equipment, grilles and registers); Bell & Gossett Co., Chicago (circulating equipment); A. E. Bergmann, Inc., Eau Claire, Wis. (Stokolair distributor).

Chicago, Wilmington & Franklin Coal Co., Chicago (stokers); Cleveland-Cliffs Iron Co., Green Bay, Wis. (stokers); Cole-Sullivan Engineering Co., Minneapolis (Cole Draft Governors); Enterprise Boiler & Tank Works, Chicago (Pure-Air conditioning units); Fairbanks, Morse & Co., Chicago (air-conditioning units); Hayes Corp., Michigan City, Ind. (combustion instruments).

Henry Furnace & Foundry Co. (Moncrieff air-conditioning units); Hinrichs Heating Co., Madison, Wis. (Gehl stokers); Holcomb & Hoke Mfg. Co., Indianapolis (stokers).

Iroquois Coal Co., Chicago (stokers); Kol-Master Corp., Oregon, Ill. (Kol-Master stokers); La Crosse Tractor Co., La Crosse, Wis. (Brunett Counterflow air-conditioning units and Par oil burners); Lau Blower Co., Dayton (blower and filter units).

C. A. Lawton Co., De Pere, Wis. (stokers); McDonnell & Miller, Chicago (boiler and water controls); Madison Gas & Electric Co., Madison, Wis. (Bryant air-conditioning distributor); Mercoid Corp., Chicago (control equipment); Minneapolis-Honeywell Regulator Co., Minneapolis (control equipment).

Modine Mfg. Co., Racine, Wis. (Modine Syncromatic air-conditioning units); Perfex Control Co., Milwaukee (control equipment); Perfex Radiator Co., Milwaukee (unit heaters).

Pocahontas Fuel Co., Inc., Cleveland (stokers); Sterling Engineering Co., Milwaukee (Thermotrol control units); Stokol-Wisconsin Co., Oshkosh, Wis. (Stokolair distributor).

The Trane Co., La Crosse, Wis. (air-conditioning units); The Vilter Mfg. Co., Milwaukee (compressors, condensers, and direct-expansion air-conditioning units); Wisconsin Oil Burner Sales Co., Madison, Wis. (Fitzgibbons air-conditioning and heating units); Wisconsin Truck & Equipment Co., Madison, Wis. (oil burners).

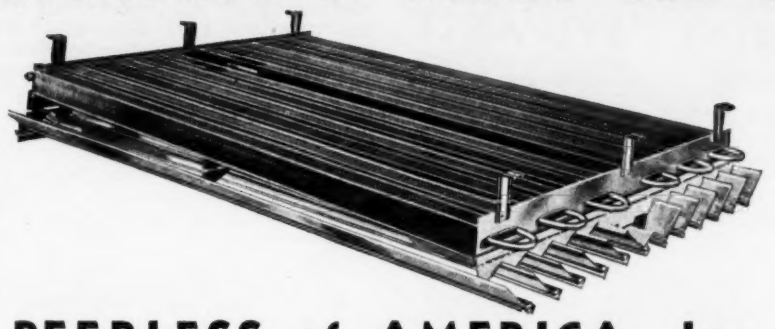
— BUYER'S GUIDE —

SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE INDUSTRY

SPEAKING of KINGS and CORONATIONS—

MAY WE MENTION THE

PEERLESS FLASH COOLER



The Peerless Flash Cooler is, by popular acclaim, the King of all natural convection cooling units. There have been many pretenders to the throne, but none of them have possessed the brilliance, sturdy character, and general all around qualifications of the King. His record of service is unblemished—he has given his followers a superior brand of refrigeration at substantially lower costs.

The Peerless Flash Cooler

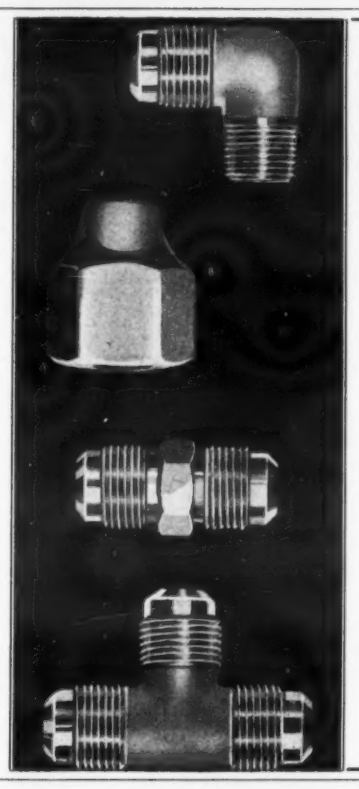
Delivers a larger volume of cooled air because the entire coil surface is operating at its highest efficiency. A smaller sized compressor will do the work of next larger size because operating pressure is at its highest possible point. Lower operating cost with superior cooling, circulation, and humidity control.

PEERLESS of AMERICA, Inc.

ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE CO.

New York Factory, 43-20 34th St., Long Island City — Main Factory—General Offices, 515 West 35th St., Chicago — Pacific Coast Factory, 3000 S. Main St., Los Angeles

BUY PEERLESS FOR PERFORMANCE



Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

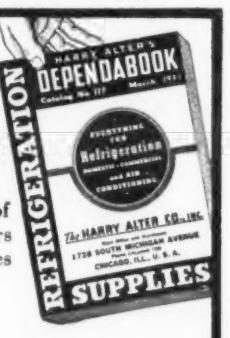
25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R.

DETROIT, MICH.

Get this NEW BARGAIN CATALOG



Distributors and Jobbers of America's finest manufacturers in refrigeration parts, supplies and equipment.

AIR CONDITIONING & REFRIGERATION SUPPLIES

THE HARRY ALTER COMPANY

1728 South Michigan Avenue

CHICAGO

BRANCHES

New York — Cleveland — St. Louis

From Crispers to Highsides, from Accessories to air conditioning equipment, from Artificial Food for displaying refrigerators to Refrigerated Display Cases for displaying food. Everything in refrigeration accessories, equipment, tools and supplies. The most complete line in the world.

Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

THE DAYTON RUBBER MANUFACTURING CO.
DAYTON, OHIO
WORLD'S LARGEST MANUFACTURER OF V-BELTS

Dayton V-BELTS

BUYER'S GUIDE

SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE REFRIGERATION AND AIR CONDITIONING INDUSTRIES

—and now the new IMPERIAL "SYLPAK"!

IN THE greatly expanded 1937 line of Imperial products for refrigeration and air conditioning work is a complete new group of Sylpak Shut-off Valves. These valves have a shorter bonnet and fit in a 4-inch conduit box.

Built for tube diameters ranging from ¼ to ⅜-inch for S. A. E. or solder fittings as desired. Brass forged body is non-porous, strong, and uniform, and has full size openings. Leak-proof metal seat.

Try these new Imperial Sylpak valves on your next job.

IMPERIAL BRASS MFG. CO.
565 S. Racine Ave., Chicago, Ill.

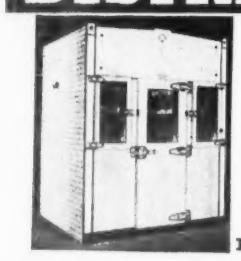
Large size valves can also be furnished up to 1½-inch female I. P. T. and 1⅜-inch O. D. tube size. Pressure relief and emergency valves, evaporator suction valves, evaporator liquid valves, small service drum valves are other new items. Write for the new Imperial catalog on refrigeration and air conditioning specialties for service work.

ORDER FROM YOUR JOBBER

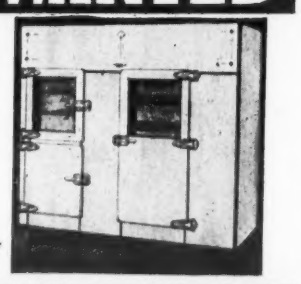
IMPERIAL Valves

FITTINGS • TOOLS • CHARGING LINES • FLOATS • DEHYDRATORS • STRAINERS

DISTRIBUTORS WANTED



Percival equipment meets every requirement of the modern food store.

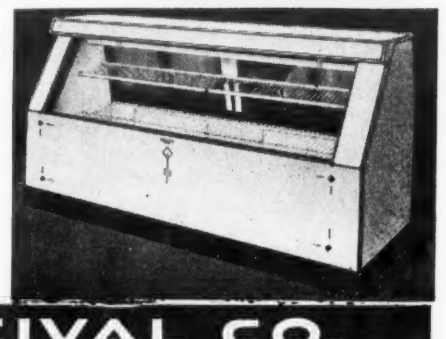


For mechanical refrigeration only

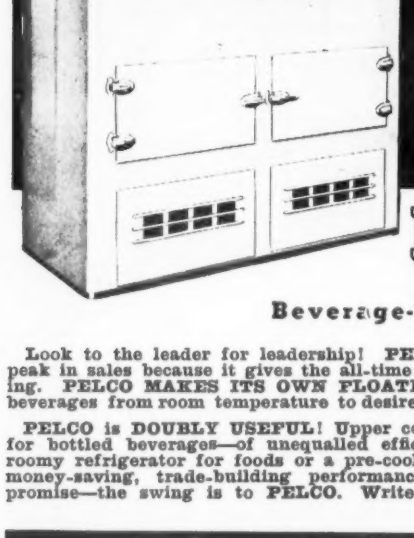
Percival's complete line will increase your sales of electrical refrigeration equipment and offer added earnings.

Desirable territories still available. Write for complete information.

1886-1937
51 years of service to meat markets.



C. L. PERCIVAL CO.
DES MOINES, IOWA



DISTRIBUTORS!
DEALERS!

Here's a BIG, NEW MARKET For Refrigeration SALES

PELCO
Electric
Beverage-Food COOLER

for
Bakeries
Resorts
Taverns
Road Houses
Refreshment Stands
Restaurants
Bowling Alleys
Billiard Parlors
Cigar Stores
Delicatessens
Creameries
or any place that serves bottled beverages and lunches

Look to the leader for leadership! PELCO gives the all-time peak in sales because it gives the all-time peak in beverage cooling. PELCO MAKES ITS OWN FLOATING ICE—cools bottled beverages from room temperature to desired degree in 30 minutes.

PELCO is DOUBLY USEFUL! Upper compartment is a cooler for bottled beverages—of unequalled efficiency . . . lower is a roomy refrigerator for foods or a pre-cooler for beverages. For money-saving, trade-building performance—that exceeds every promise—the swing is to PELCO. Write Dept. A-47.

Refrigerator Division
PORTABLE ELEVATOR MFG. CO.
BLOOMINGTON Est. 1899 ILLINOIS
Export Dept.:
304 E. 45TH ST., N. Y. CITY Cable Address: CARMUSE—N. Y.

ASK YOUR JOBBER
— or write TODAY for BULLETIN 701
Ranco INC
COLUMBUS, O.

Ranco CONTROLS

MORE *EXACT* REPLACEMENTS THAN *ANY OTHER* LINE!

Learn the Fundamentals Now!

Read 'Air Conditioning Made Easy'

Published on this and the succeeding page is the beginning of Section 15 of AIR CONDITIONING MADE EASY, a manual by F. O. Jordan, air-conditioning editor of the NEWS and former head of the air-conditioning development laboratory of the Airtemp division of Chrysler Corp. The book is being published in serial form in the weekly issues of AIR CONDITIONING AND REFRIGERATION NEWS.

AIR CONDITIONING MADE EASY is a manual and textbook on air-conditioning engineering practice. The section starting in this issue—"Design of Equipment"—gives an indication of the wide scope of the book. It is a manual which deals not only with the engineering principles of air-conditioning and field application procedure, but also with the actual design of equipment and even the proper organization of personnel for a company getting into the field.

As such, AIR CONDITIONING MADE EASY should be widely useful to individuals already in the air-conditioning field who want to broaden their knowledge of it, to students who are intending to make air conditioning their career, and to executives of manufacturing or distributing organizations who are contemplating getting into the air-conditioning business.

The following instalments of AIR CONDITIONING MADE EASY have already been published in the NEWS:

What Is Air Conditioning?—Sept. 23.

Section 1, Introduction, and Section 2, Definitions and Simple Thermodynamics—Sept. 30.

Section 3, Coil and Water Cooler Performance—Oct. 7 and 14.

Section 4, Condensing Unit Performance—Oct. 21.

Section 5, Air Movement and Ventilation Requirements—Oct. 28.

Section 6, The Complete Air-Conditioning System for the Cooling Season—Nov. 4, 11, 18, and 25.

Section 7, Heating—Dec. 2, 9, 16, 23, 30, Jan. 6, 13, 20, 27, Feb. 3, 10, 17, 24, March 3, and 10.

Section 10, Don'ts—March 17 and 24.

Section 14, Controls and Zoning—March 31, April 7, 14, and 21.

— AIR CONDITIONING MADE EASY —

SECTION NO. 15

DESIGN OF EQUIPMENT

BY F. O. JORDAN

General

There are many matters which rightly should be considered before and while designing any product. Frequently, certain points may receive lengthy attention, may be the excuse for never-ending conferences, may become the means for side-tracking important issues or even derailing the entire program. Yet their actual value may approximate zero.

A generally effective method of avoiding this, of getting on the market with a commendable product, is to remember at all times that the immediate purpose of making a product is to *sell* it.

Some items which generally do effect the salability of air-conditioning equipment follow:

A—Adaptability to the Market

While it is difficult to determine just what consideration is most important, the adaptability of the product to the market certainly must be determined before other points may be considered.

Before adaptability can be determined, the requirements of the field must be ascertained. This may best be done by consulting men who are experienced in the marketing division of the industry, and who therefore know the types and sizes of equipment that are in demand and that have sold in the greatest numbers.

For example, losses would probably result if large numbers are made and stocked of small, vertical, wall-type air-conditioning units, or of one-half-ton room-type air-conditioning units, or of 15-ton suspended-type air-conditioning units, or of 50-ton condensing units, because the demand for such models is very limited.

The stock will move much more rapidly if the manufacturer concentrates upon the heavy sellers, such as condensing units ranging from 1 to 20 tons capacity, suspended-type air-conditioning units ranging from 3 to 10 tons capacity, room-type air-conditioning units ranging from 1 to 2 tons capacity, etc.

Furthermore, adaptability may be enhanced by designing flexibility of capacity and air throw into equipment so that it may be adjusted to fit its application.

B—Performance

Once having decided upon a product that will fit the market, the designer must consider the performance which he must design into his product. In this connection it must be remembered that while the public in general (especially in the residential field) will not pay a heavy premium for impractical features which result in wonderful recording instrument charts but which have little or no actual effect upon comfort, satisfactory performance *must be obtained* or the product will not sell at any price.

It is essential that performance include the following points:

1. Capacity for maintaining at efficient operating conditions the room air temperature, humidity, purity, and motion necessary for comfort.
2. Dependable operation.
3. Ease of service.
4. Low noise level.

C—Cost

Although the consideration of cost has been relegated to third place, it is second to none in importance. If the price of the product to the consumer is wrong, nothing can sell it.

There are of course features which tend to improve performance but whose use results in a simultaneous increase of cost. There are others whose omission lowers cost but results in undesirable effects upon performance. Such features must be used sparingly, if at all. Fortunately, however, certain features exist whose use improves performance and reduces costs at the same time. It is such features as the latter for which the designer is looking.

There are various ways of reducing costs. The principal ones follow:

1. Omission of various features and functions. If such omissions impair performance, their status ranges from questionable to very bad.

2. Standardization of equipment and parts. Motors, fans, coils and other parts should be made the same for various models insofar as practicable. Such standardization and interchangeability reduce manufacturing and stock costs, and simplify service problems.

An even greater saving may be effected by standardization of the units themselves. This may be done by designing flexibility into each unit so that it may be operated at a considerable range of air velocities and refrigerant temperatures.

If this is done, each model may be used efficiently over a considerable range of capacities so that the number of models which are necessary for covering the field is reduced.

3. Designing to save in materials and ease of fabrication and assembly.

4. Designing the equipment so that the fundamental laws of Nature assist rather than handicap its operation.

D—Features

Of importance in "putting over" any product are special features upon which sales talks and advertising campaigns may be built. Although it may be considered to be an asset if the use of a given feature actually results in an improvement in the product, it is by no means necessary for this to be true in order for the feature to result in an improvement in sales, provided that a catchy story can be woven about the wonders of said feature.

As an example, the gasolines for automobile consumption generally available do not differ greatly. Therefore, discovering an exclusive feature for the elaboration of the sales promotion department of a given vendor of gasoline might appear to be a difficult task.

However, in a gallon of any ordinary gasoline lie concealed upwards of one hundred million foot-pounds of energy, which is feature enough for any good sales promotion man to go to work upon, simply because one hundred million of *anything* sounds to the lay mind like an awful lot of *something*. Indeed "100,000,000" is an impressive row of figures.

Although the same value is true for any ordinary gasoline, more than one purveyor of gasolines has boosted sales of his product by stressing the point upon billboards and via other advertising media that his gasoline contains over one hundred millions of foot pounds of energy. Result: Many persons get the impression that the particular vendor's product is unique in its energy content, and so refuse to buy any other.

The intent of the above story is not to belittle the custom of tacking on features and playing them for all they're worth. Neither is there a desire to leave the impression that features need have no actual effect upon performance.

The point is that since effective sales campaigns may be built around almost any feature, it behooves the designer to furnish some features of *actual* value, to give the feature writer a distinct edge over the "baloney" of the unscrupulous competitor.

Such features include those arising from superior performance (see item "B" above), from handy control features, or from the advantages offered by entirely self-contained equipment installation of which involves nothing more complicated than setting the unit down and connecting some pipe to it. Also in this category is the designing of inherent control into the product so that it does not require the use of complicated, costly, and delicate controls.

E—Appearance

A comely exterior tends to cover a multitude of detrimental features and can be of considerable assistance in selling an inferior product, while the first impression resulting from a homely exterior may turn way either the potential lover or the prospective customer before either one looks farther to discover the sterling character or efficient performance of the showroom model.

Because of this influence upon the impressions, appearance is an important adjunct to the adaptability and performance which should be designed into the product.

For example, a cabinet which does not harmonize with the interiors generally found in the type of projects for which the room-type air-conditioning unit is designed may influence the buyer to select competitive equipment of inferior performance but of more pleasing appearance.

Likewise, a condensing unit of bulky top-heavy appearance with odds and ends of piping and gadgets which appear to be hopping here and there in aimless abandon has turned many a buyer aside to purchase a competing unit of neat workmanship appearance regardless of specific power consumption.

However, the impression must not

(*Concluded on Page 23, Column 1*)

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
Detroit Michigan

Specific Requirements Necessary in Design Of Condensing Unit

(*Concluded from Page 22, Column 5*)

be formed that pleasing appearance does not accompany good performances. The opposite usually is the rule. More often than not, good arrangement and proportions may be taken as a likely indication of good performance because the same well ordered procedure which produces one generally results in the other.

F—Appeal

Whatever appeal actually is, it is the composite result of adaptability to the market, performance, attractive features, appearance, traditions and background of the manufacturer etc., as properly presented for the digestion of the prospect. Appeal has what it takes to create desire in the potential purchaser.

Therefore, the product designer's excuse for living must be his ability to design into a product the necessary *customer appeal.*

The Condensing Unit

The design of the condensing unit should agree with general product requirements enumerated above. In addition to general requirements are the specific requirements listed below.

A—Range of Capacities

Since compressors are to be operated by standard motors, they should be so designed that they load the various standard motors to a maximum safe limit to get the most out of the motor, and to avoid the extravagance of buying motor capacity which is not utilized.

If each compressor is so designed that in order to use all of the available capacity of its motor, the compressor must be operated at the maximum allowable speed (considering noise, valve action, bearing friction, etc.), the maximum capacity per dollar of cost of motor and compressor will have been obtained, if only the one-unit size is considered.

However, a complete line of equipment must be made up of many unit sizes, so that the entire line must be considered. Thus, a considerable saving in manufacturing costs may be effected by taking advantage of the reduction in number of compressor block sizes, resulting from the use of each compressor block throughout a range of capacities, by using a range of speeds for each compressor, even though such practice demands that in certain units, compressor blocks must be used at less than their maximum capacities.

For example, an entire line of compressors ranging from ¼-ton to 30-tons capacity may be covered economically and efficiently by the use of seven block sizes merely by utilizing a range of compressor speeds and motor sizes. Such a line is shown by the following tabulation:

Compressor Model No.	Hp. of Motors	Approx. Capacity Range in Tons
1	¼	¼
2	½ and ¾	⅜ to ¾
3	1 and 1½	⅞ to 1½
4	2 and 3	1¾ to 3
5	5 and 7½	3½ to 7½
6	10 and 15	8 to 15
7	20 and 30	16 to 30

Compressor speeds must be regulated as necessary, to develop the capacities within the range of the motors.

Each compressor block must be provided and assembled with a condenser of the proper capacity to carry the maximum load of the larger motor listed at an economical head or condensing pressure and condensing water rate (see sample condensing unit capacity table in Section No. 12).

The usage of various blocks as tabulated above generally follows:

Block No. 1 — "Spot" cooling or small bedrooms.

Blocks No. 2 and 3—Room units.

Block No. 4—Medium-sized homes.

Block No. 5—Small commercial and large residential installations.

Blocks No. 6 and 7—Commercial installations.

For installations larger than 30 tons, combinations of various condensing units may be used because of the flexibility resulting from ability to cut a portion of the condensing units out of service during light loads. However, if desired, condensing units larger than the 30-ton size may be included.

B—Service

Since it is not customary for the user to "turn in" a condensing unit on a new model every year, the unit must be so designed and constructed to give lasting and trouble-free service. In other words, this extremely important cog in the refrigeration machine must be built for "service" rather than for "speed."

Yet, because of the lower operating pressures used with some refrigerants employed in air-conditioning work, it is neither necessary nor desirable to employ the excessively heavy constructions which are required in the ammonia or carbon dioxide fields.

Materials must be non-porous, close-grained and non-corrosive, and of such character that they are not affected by the refrigerants used. Iron, steel, copper, and brass are not affected by Freon or methyl chloride.

The number of parts must be held to a minimum, and the entire mechanism must be arranged toward easy accessibility for the service that even the most accurate machines require. Special attention to accessibility, to ease of repair and replacement must be given to valves and seals.

Progressive Jobbers Everywhere Stock A-P Controls.
AUTOMATIC PRODUCTS COMPANY
2400 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

New Delco-Conditionair Dealer in Ann Arbor

ANN ARBOR, Mich.—Appointment of Ann Arbor Construction Co. as Washtenaw county distributor for Delco-Frigidaire automatic heating, cooling, and air-conditioning equipment has been announced by W. A. Taylor, wholesale manager of R. L. Spitzley Heating Co., state Delco-Frigidaire distributor.

Manley Osgood is president and general manager of the Ann Arbor company.

A new division of the company is being formed to handle the new line. Besides a sales force, engineering facilities and an installation and service department, comprised of factory-trained men, will be included. A completely equipped sheet metal shop will be maintained.

Products to be handled include automatic oil burners, automatic boilers, winter air-conditioning units, water heaters, individual room coolers, and complete year-around air-conditioning systems for both domestic and commercial installations.

All-Norge Home Built by Baltimore Realty Firm

BALTIMORE—First of a series of all-Norge homes planned by Prudential Realty Corp., local builder and realty operator, has been constructed by that firm at 6 Liberty Parkway, Dundalk, Md. Norge products installed in this home include refrigerator, oil burner, and range.

Norge Fine-Air conditioning equipment also is being installed in one of the city's large realty developments. Five of the projected 50 homes in this group have already been constructed.

St. Louis Wire Company Installs Servel System

ST. LOUIS—Ludlow-Saylor Wire Co., manufacturer, has purchased Servel air-conditioning equipment for its factory offices from Commercial Engineering & Sales Co., Servel distributor in this territory.

Equipment includes a 15-ton Servel air-conditioning machine unit.

Delco-Conditionair and Potter Equipment in New Restaurant

INDIANAPOLIS — Refrigerating Equipment Co. installed a Delco-Conditionair, and Geiger Co. a Potter refrigeration unit, in the new Wheeler's Drive-In restaurant, which opened April 10.

Milwaukee Sunbeam Dealer Opens New Showroom

MILWAUKEE—R. A. Capps Co., dealer in Sunbeam air-conditioning units and furnaces, has opened a new showroom at 916 N. Plankington Ave. here.

$30,000 Office Building Job Installed in Little Rock

LITTLE ROCK, Ark.—Air-conditioning equipment costing $30,000 is being installed by York Ice Machinery Co. in the Gus Blass Building here.

Detroit Delco Dealer Erects New Quarters

DETROIT—Domestic Air Conditioning Co., Delco-Conditionair, Season-Aire, and Hess heating and air-conditioning equipment dealer is erecting a modern steel, concrete, and brick building on Bartlett Ave., near Woodward Ave. in Highland Park, according to F. E. Ritzenheim, president and sales director.

The 60x160-ft. building will be completely air conditioned, and the metal-decked roof will have 4 inches of insulation. It is expected to be ready for occupancy within 30 days.

Executive and engineering offices, and a large showroom for display of all lines handled by the company, will be located in the front part of the building. Almost 7,500 sq. ft. of floor space will be devoted to manufacture of the company's "D.A.C." graduated trunk-line air duct systems.

August M. Kolstad, who has been associated with the company since its beginning, is vice president and general manager.

Servel Dealer Sells 10-Ton System to Cigar Store

SPRINGFIELD, Ill.—Capital City Paper Co., Servel distributor, has sold a 10-ton Servel air-conditioning system to Graham Cigar Store, situated within a block of the Sangamon County courthouse where Abraham Lincoln once practiced law.

Springfield summer temperatures reach an average of 95° F. dry bulb, and 78° wet bulb. The cigar store is including air conditioning in its modernizing program.

C. C. Hoogland is head and A. L. Fait sales engineer of the Capital City company.

May Uses Large Auto Cruiser To Display & Sell Line

BALTIMORE—The May Oil Burner Corp. has put into service a 25-foot auto cruiser, stocked with the company's oil burners and winter air-conditioning equipment, as a means of carrying factory material and products direct to prospective dealers and customers.

In addition to conditioning equipment, a full-size "Quiet May" oil burner is installed in the cruiser, and can be operated just as if it were in a showroom or a home. Illuminated transparencies are used to show construction features.

Sound equipment is installed in the cruiser, permitting the salesman to talk to the audience gathered outside, or to play the electrical transcriptions furnished dealers as a part of the company's radio program material.

Davidson Joins Pennsylvania Power & Light Co.

OMAHA—John S. Davidson, manager of the air-conditioning department of the Nebraska Power Co., has become associated with the Pennsylvania Power and Light Co. Mr. Davidson was secretary of the Omaha Air Conditioning Bureau.

Airtemp Men's Chorus Sings Over Dayton Radio Station

DAYTON—A men's chorus, composed of 42 plant and office workers at Airtemp, Inc., air-conditioning subsidiary of Chrysler Corp., sang a group of songs over radio station WHIO on April 19. James A. Fox was director of the chorus.

G-M Sales Corp. Distributes Delco in Cleveland

CLEVELAND—Frigidaire Division of General Motors Sales Corp. here has been appointed distributor for Delco automatic heating equipment, Delco automatic furnaces, and Delco-Conditionair equipment for gas or oil. H. H. Kennedy is manager of the branch.

BUYER'S GUIDE
SPECIAL RATES APPLY TO THESE COLUMNS ONLY
WRITE ADVERTISING DEPT. FOR FULL INFORMATION

SUPPLYING THE REFRIGERATION INDUSTRY

Evaporators, Receivers, Condensers, Compressor Domes, Compressors and Mechanical Parts. Also "Houdize," a perfected process for permanently uniting ferrous or non-ferrous metals.

OAKES PRODUCTS CORP. North Chicago and Decatur, Ill.
HOUDE ENGINEERING CORP. Buffalo, New York

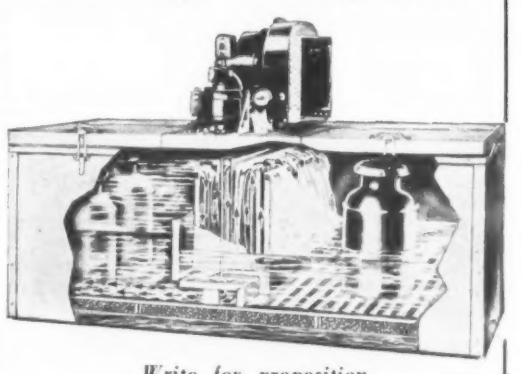
DIVISIONS OF HOUDAILLE-HERSHEY CORPORATION
General Executive Offices: Detroit, Mich.

NEW KOCH ECON-O-CASE
WELDED ALL-STEEL CONSTRUCTION
CORKBOARD INSULATION
TRIPLE GLAZING
HUMIDITY AND TEMPERATURE IN PERFECT BALANCE

THE PRICE LEADER OF A BIG LINE
DISTRIBUTORS WILL BE INTERESTED
WRITE TODAY KOCH REFRIGERATORS NORTH KANSAS CITY, MO.
EXPORT DEPT. 304 E. 45TH ST. N. Y. CITY

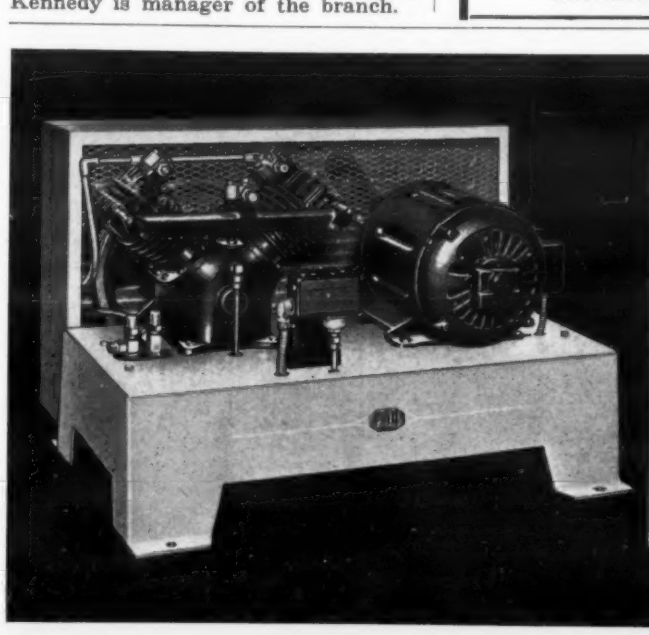
Raise Your Dairy-farm Sales Level
with ZERO-FLOW'S
"neck-high" cooling level

DEMONSTRATE to dairymen ZERO-FLOW'S constant water level during cooling period of *both evening's and morning's* milk (regardless of number of cans), and watch your sales rise. Tell them about ZERO-FLOW'S rapid, uniform milk cooling (to below 50° in an hour), and about the continual circulation of icy-cold water around cans *up to their necks* during cooling period. Show them they never have to handle cans twice; that reversing switch directs flow of water to either compartment. Here's the labor-saving cooler that puts your dairy-farm business on a quick-selling, trouble-free, profit basis.



Write for proposition.

WILSON CABINET CORP.
114 MAIN ST. SMYRNA, DEL.



PAR AIR COOLED HIGHSIDES

PAR refrigerating equipment has been designed by men with years of experience in the commercial refrigeration industry. All models have been thoroughly tested before approving for production.

Multiple cylinders of large capacity insure very low operating speeds. Sizes ¼ to 1 horse power are two cylinder pumps. Sizes ½ and 2 horsepower are V type four cylinder pumps.

Par highsides are designed for use with Freon or Methyl Chloide refrigerants. All units are charged with Freon unless otherwise specified.

All air cooled highsides are equipped with oversize condensers, extra large receivers, sight oil gauge, shut-off valve between condenser and receiver, completely wired ready for installation.

Attactively finished, red pressed steel base, motor-compressor—control, black enamel, belt and fan guard silver. Base silver striped as shown in illustration.

MODERN EQUIPMENT CORPORATION
DEFIANCE · OHIO · U·S·A

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

POSITION AVAILABLE for engineer capable of writing, developing, and supervising correspondence course in air conditioning and refrigeration. Also openings available for teacher in day and evening sessions of various phases of air conditioning, refrigeration, and drafting. Write only, giving qualifications, etc. TECHNICIANS INSTITUTE, 244 W. 14th St., New York City.

EXCELLENT OPPORTUNITY for all around shop man capable of managing service shop specializing in complete rebuilding of Majestic hermetically sealed units. State qualifications and salary desired. Box 919, Air Conditioning and Refrigeration News.

POSITIONS WANTED

EXPORT: Engineer, 32, American, with technical and export experience in household and commercial refrigeration, market analyses, distributor selection, foreign merchandising, American buying. Widely traveled, fluent German, some French. Seeks connection with outstanding organization in America or Europe offering future. Will travel or reside abroad. Employed at present. Box 913, Air Conditioning and Refrigeration News.

YOUNG MAN, single, trained by the Refrigeration and Air Conditioning Institute, Chicago. Desires position with prominent firm, servicing and installing mechanical refrigeration systems. Box 917, Air Conditioning and Refrigeration News.

FRIGIDAIRE INSTALLATION and service man with many years' experience desires position as service manager with factory, factory branch, or large distributor of refrigeration products. Experience gained through connection with Frigidaire distributors in Minneapolis, Minn., and Milwaukee, Wis., and the past five years operation of going independent service company specializing in maintenance contracts. Reason for seeking employment elsewhere: change of climate. Age 38, weight 232, Height 6'1½", married and of sober habits. References. Available on 30 days' notice. Address RAY J. SPILMAN, 1912 W. Walnut St., Milwaukee, Wisconsin.

MAJOR HOUSEHOLD appliance salesman desires connection as distributor salesman or with a live organization as retail man. Will travel or go anywhere. Ten years' experience in national brands selling dealers and retail sales. Can act as crew manager. Interested in air conditioning. Can furnish best of references. Box 918, Air Conditioning and Refrigeration News.

YOUNG MAN 23 years old, graduate of Detroit School of Refrigeration and Air Conditioning and with considerable experience in the service field, desires position with progressive concern. Will go anywhere. Has car and tools. Write FLOYD WOOD, 231 Hanover St., Toledo, Ohio.

FRANCHISE AVAILABLE

REFRIGERATOR display case dealers, mechanical refrigeration dealers, and service organizations. Write today for full information on dealer franchise world-famous Oreole refrigerator display cases, coolers, institutional boxes, etc. Address, stating territory desired, Sales Manager, OTTENHEIMER BROS., INC., 1001-45 N. Montford Ave., Baltimore, Maryland.

EQUIPMENT WANTED

WANTED—General Electric and Westinghouse household units. State type, model, condition and price wanted. Box 915, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

TWIN CYLINDER and single cylinder Methyl compressors, brand new. Ideal for domestic and small commercial installations. Also fans, pulleys, expansion valves, fittings, recording instruments, receiver valves, and condensers. Priced at fraction of cost. A few ⅛ H.P. A.C. single cylinder complete condensing units. Discontinuing our refrigeration department. Box 914, Air Conditioning and Refrigeration News.

REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for prices and dealerships. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

MAJESTIC — GENERAL ELECTRIC — SERVEL hermetic units repaired and exchanged. Majestic—$20.50—General Electric—$25.00—Servel—$18.50 F.O.B. our factory. One year unconditional guarantee. Every unit undergoes complete tests for temperature, cycling, wattage consumption and quietness on genuine test equipment. See our advertisement this issue under "Buyer's Guide". REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

HERMETIC UNITS REPAIRED and exchanged—Majestic $18.50—Westinghouse $25.00—Gibson $18.50—General Electric $25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. ALLIED REFRIGERATION PRODUCTS CO., 1947 Flushing Ave., Brooklyn, N. Y.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types $1.75, all others, $2.00. All work unconditionally guaranteed for six months. Jobs completely refinished. Prompt service. UNITED GAUGE AND INSTRUMENT CO., 436 West 57th St., New York City.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halectric can repair it. Service prompt, prices right, guarantee reliable. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

SCHOOLS

ATTENTION, SERVICE MEN! Write for particulars concerning our extension course designed especially to give you a thorough knowledge of the technical part of refrigeration and air conditioning. For men with no refrigeration experience, we recommend our resident course. DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING, 4125 Grand River Ave., Detroit, Mich.

STUDY REFRIGERATION ENGINEERING. A new, personally supervised Home-Study course. Recently copyrighted. Lessons comprise text, illustrations, blueprints; all to make subjects and problems easily understood. Acquire a theoretical knowledge of refrigeration engineering. For details write FEDERAL INSTITUTE OF REFRIGERATION ENGINEERING, 712 N. Latrobe Ave., Chicago, Ill.

ASK FOR NEW BULLETIN 144C
"T" Series Thermo Valves
ALCO VALVE CO., Inc.
ST. LOUIS, MO.

QUESTIONS

Production Standings

No. 3039 (Dealer, Missouri)—"Will you kindly advise us the makes of electric refrigerators having the largest production in number of units sold during the season of 1936. We are particularly interested in the standing of General Electric and Crosley."

Answer: We cannot give you data on sales of the individual makes of refrigerators, as manufacturers do not make a practice of making their sales volume public.

List of Manufacturers

No. 3040 (Sales Consultant, New York)—"I am greatly interested in your list of 230 manufacturers of refrigerators which I understand you sell for $3.

"Can you tell me if this list includes names of individuals. We are, of course, particularly interested in the sales executives of those manufacturers."

Answer: We believe you have reference to the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY, which contains the names of manufacturers in the electric refrigeration and air-conditioning industry listed three ways: alphabetically (by trade name), geographically (by location), and in a classified section (by nature of product). The geographic section incorporates names of executives in the various companies. This book now sells for $1.50.

The 1937 REFRIGERATION AND AIR CONDITIONING DIRECTORY, scheduled for publication in May, will bring these lists of manufacturers and suppliers up to date, and will offer many added services. The 1937 DIRECTORY will sell for $3 to those who order before July 1.

Air-Conditioning Data

No. 3041 (Manufacturer, Illinois)—"We are wondering if you can be of help to us in furnishing statistical data regarding all types of self-contained, portable air-conditioning equipment. Facts as to whether they are air cooled, water cooled, circulating, filtering, fresh air intake, humidifying, dehumidifying, vaporizer, cleaning, etc."

Answer: A great deal of the information you are seeking can be found in 1936 REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS BOOK, a description of which will be found in the adjoining column.

Government Purchase

No. 3042 (Dealer, Michigan)—"Would it be possible for me to have, at an early date, one of your issues that featured the government's purchase of 16,697 Westinghouse refrigerators.

"I am deeply interested to learn if the Kelvinator Corp. was included in the four that quoted their lower initial prices and current consumption, and the other firms who participated in the bidding."

Answer: The issue which carried the story (Sept. 2, 1936,) has been completely sold out, and we are unable to furnish you with a copy.

Other manufacturers besides Westinghouse that submitted bids included: Kelvinator Corp., Leonard Refrigerator Co., Universal Cooler Corp., General Electric Co., Frigidaire Corp., Stewart-Warner Corp., and Gibson Electric Refrigerator Corp.

Small Compressors

No. 3043 (Manufacturer, Ohio)—"We are interested in learning names and addresses of companies supplying refrigerator compressors of small capacity, taking up a minimum of head room such as compressors by Gibson and by Commercial Refrigerator Co. of Rochester, N. Y. We would appreciate it if you could supply us with such information.

"Small vertical compressors seem always to require too much height, so you see it really is a short job we require."

Answer: From the May 6, 1936, "Commercial Specifications" issue of the NEWS we have taken the following specifications showing the make, horsepower, and height of compressors for several makes, as follows:

Make	Hp.	Height
General Electric	¼	16⅜
General Electric	⅓	16⅞
Frigidaire	¼ & ⅓	14½
Kelvinator	¼	15¾
Westinghouse	⅛ & ⅙	11½
Westinghouse	¼ & ⅓	11⅞
Servel	¼	12
Servel	⅓	13
Ice-O-Matic	¼	13¼
Merchant & Evans	¼	14
Norge	⅕ & ¼	13¾
Super-Cold	¼	11
Mills	⅕, ¼ & ⅓	12½
Deissler	⅛ & ¼	12
Starr	⅛ & ⅕	12½
Universal Cooler	¼	19½
Brunner	¼ & ⅓	16¾
Curtis	¼ & ⅓	16¾

We might further suggest that you use an advertisement in AIR CONDITIONING AND REFRIGERATION NEWS, giving specifications of the unit which you are seeking.

Cooling Vehicles

No. 3044 (Sales Agent, California)—"Please send me air mail names of manufacturers interested in cooling equipment for autos, trucks, or trailers. If you have already printed such lists, send me copies c.o.d. in order to expedite."

Answer: Refrigerator equipment for trailers made by the Aerflo Co., 423 Reid Bldg., 138 Cadillac Sq., Detroit, was described in a story published in the Nov. 18, 1936, issue of the NEWS; and a story on the air-conditioning equipment made for automobiles and buses by Carrier Engineering-Houde Engineering Corp. was published in the Nov. 6, 1935, issue of the NEWS.

Lists of manufacturers of refrigerated truck equipment were published in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Refrigerated Lockers

No. 3045 (Advertising Agency, Ohio)—"It is our understanding that large refrigeration warehouses are equipped with a special type of compartment locker which is rented to individuals for the purpose of storing meat and dairy products in the refrigeration plant, the object being that the individual finds it possible to purchase in larger quantities, at the quantity price, and store it in lockers for use as needed.

"We would like to have any information on this type of product that you may have, such as the type of locker which has been found suitable for this purpose, who makes them, and any information that you may have on it."

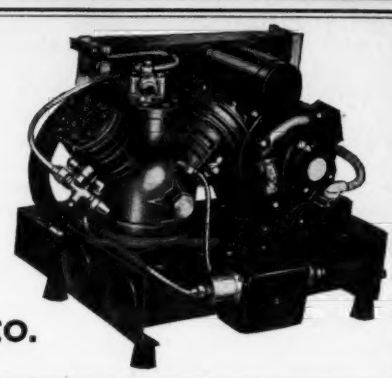
Answer: On page 11 of the Feb. 10 issue of AIR CONDITIONING AND REFRIGERATION NEWS is a story concerning refrigerated lockers.

Some of the manufacturers of commercial and industrial refrigerating equipment such as York Ice Machinery Corp., Carrier Engineering Corp., and the Frick Co., can give you names of builders of such lockers. You might also write Frank Smith, secretary of the Iowa State Refrigerated Locker Owners Association, Ames, Iowa.

BUYER'S GUIDE

SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE REFRIGERATION AND AIR CONDITIONING INDUSTRIES

CHIEFTAIN
QUALITY-BUILT COMPRESSORS and CONDENSING UNITS
The CHIEFTAIN line represents precision manufacture and proven service, and is designed for all domestic and light commercial applications.
Sizes range ⅛ to ¾ HP.
Write for prices.
TECUMSEH PRODUCTS CO.
TECUMSEH, MICH.



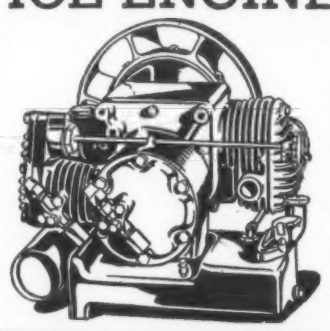
BARE COMPRESSORS and COMPLETE UNITS
All types for service replacement and new installations . . . One, two and four cylinder models from ¼ h.p. to 20 h.p. . . . For Sulphur Dioxide, Methyl Chloride or Freon.
Write for new catalog—a valuable reference for assemblers and service companies.
MERCHANT & EVANS COMPANY
Philadelphia, Pa., U.S.A., Plant at Lancaster, Pa.

DITLEVSEN & COMPANY, Inc.
75 West Street, New York, N. Y.
CONDENSING UNITS from ¼ to 2 H.P. Air and Water Cooled.
BARE COMPRESSORS
EXPORTERS OF:
Household Refrigerators, Commercial Condensing Units, Bare Compressors, Commercial Evaporators, Ice Cream Cabinets, Milk Cooling Cabinets, Air Conditioning Equipment.
1½ h.p. Water Cooled Unit
Attractive Prices Write for Details

CATALOG NO. 11
INTRODUCES
THE GREAT CHANCO HIGHSIDE
GET ALL DETAILS — WRITE ON YOUR LETTERHEAD
H. CHANNON CO.
133 N. WACKER DRIVE CHICAGO TEL. FRANKLIN 0380
"SUPPLIES — TOOLS — EQUIPMENT — PARTS"

GIBSON Condensing Units
for
Hotels Bars Fountains
Institutions Food Stores
. . . and All Other Commercial Uses
¼ H. P. to 15 H. P. Air Cooled—Water Cooled
Get Our Proposition Before You Buy
Gibson Electric Refrigerator Corporation
Greenville Michigan

ICE ENGINE—Gasoline Powered



Engine and Compressor one balanced Unit designed and built by the largest manufacturers of Gasoline Engines in the World.
Compressor, 2¼ x 1½ is driven at 625 RPM, one-half Engine Speed, and is oiled for life. Engine displacement—8.95 cu. in. Compressor—5.96.
Ideal for grocery and delicatessen Cabinets, medium size display and Freezer Cases, Ice Cream Cabinets, Soda Fountains, Milk Coolers; Multiples of domestic Cabinets or small commercial Units.
Price reasonably low, liberal dealer discount.
Send for Free Illustrated and Descriptive Folder
NATIONAL ELECTRIC TOOL CO.
Dept. RN—558 W. Washington St., Chicago, Ill.

UP-TO-DATE SPECIFICATIONS DATA
1937 DATA TO BE INCLUDED WITH 512-PAGE BOOK

A new 64-page booklet giving specifications of principal makes of 1937 Household Electric Refrigerators will be given with all future orders for the 1936 Specifications Book which includes data on all models of all makes of household and commercial refrigeration equipment and air conditioners for all years.

The material is a revision of that which appeared in the March 17 issue of the News plus the tabulation of "convenience" features which appeared in the News issued April 21.

Material in the Specifications Book was compiled with a view toward making it usable by both the service man and salesman. For the service man, the 512-page book gives information on the kind and quantity of refrigerant, belt size, compressor and motor data, etc. Of interest to salesmen is the list price, cubic-foot capacity, dimensions, shelf area, finish, etc. This information applies to commercial condensing units and air conditioners as well as household electric refrigerators.

Price $3.00 per copy . . . Send order with remittance to
BUSINESS NEWS PUBLISHING CO., 5229 Cass Ave., Detroit, Mich.

How Carbon Dioxide Works to Preserve Foods in Storage & Suggestions for Its Use

By C. D. McLaughlin, Kelvinator Corp.

USE of carbon dioxide as an aid in the preservation of perishable products under refrigeration is becoming more interesting and profitable.

A great deal of experimental work has been done in England and Germany on this subject. One of the principal uses to which carbon dioxide is being put in refrigeration is prolongation of the cooler storage period.

There are three reactions that need to be controlled in the storage cooler to increase the period of storage and still maintain the storage products in a salable condition.

These are:

(a) The animal reaction—or control of bacteria.

(b) The chemical reaction—or control of oxidation.

(c) The vegetal reaction—or control of mold growth.

A great deal has been done and much progress noted in the control of (a) and (c) by regulation of temperature and humidity. We are now entering an era in which much will probably be heard about item (b) by chemical inhibitors and especially carbon dioxide.

AIR MOVEMENT USED

The most common method of checking the growth of bacteria and mold, in the past, has been by means of air movement induced by allowing the medium to circulate by natural or forced convection.

The more uniform the temperature of the storage chamber, the less circulatory will be the movement of the air. Above a certain point in this speed of circulation rests a tendency to dry out meat and other products containing a high moisture content. Below certain circulation limits lies a tendency toward stagnation or slime.

Controlling the humidity of the air in the storage space has aided greatly in inhibiting the growth of mold. The control of temperature, at a point near the freezing point of free water has greatly retarded the growth of bacteria.

There are, however, very definite limitations on the time that meat and other perishable products may be safely kept in storage through the control of the two factors mentioned in (a) and (c). A report of tests made by Swift and Co. in its bulletin, "Care and Handling of Meats," gives some interesting data on the ideal holding condition of meat products through the control of temperature and humidty.

According to the Swift and Co. bulletin, the recommended average relative humidity for storage coolers is found between 75 and 85%. The shrinkage of various meat cuts as the temperature varies also is shown in this report.

The report shows that while maintaining a constant average humidity of 75% to 85% relative, the shrinkage increased as the average temperature was allowed to rise.

STORAGE TOO SHORT

At best the storage period for meat and other perishable products is far too short for profitable operation under present highly competitive conditions. Furthermore, one of the objects desired is to store perishable products at a time of plenty, or during seasonal periods of growth or production, and to be able to spread the delivery period or hold off of the market to obtain or maintain a price that will not entail loss to the producer or owner.

Experiments have been progressing during the past several years in the use of carbon dioxide gas to replace part or all of the oxygen in the air of the storage chamber and thus to control the oxidation process. Most of this work has been done in England and Germany.

In England, under the Department of Scientific and Industrial Research, many interesting and highly favorable results have been obtained and are being put to practical use. From 1932 to the present, Plank and Heiss have been reporting in the technical journals of Germany some of the experiments and results of their findings in that country. Other continental countries have been listed as doing some experimental work along this line. Some experimental work has been done in the United States and Canada, especially in prolonging the storage period of eggs.

PROLONGED STORAGE THEORY

A simple theory may be suggested as the reason for obtaining satisfactory results in prolonging cooler storage. This theory is advanced in simple language, understandable by the ordinary layman, with no thought of delving into the highly technical aspects of the case.

During the process of life growth there is a continual transformation and building up of new life cells to replace the old and worn out tissue of all living organisms, and in every case oxygen is taken from the air and through the chemical processes of nature gases are given off as a result. The most common of these is carbon dioxide, or CO_2. Man is perhaps the most complex of all nature's handicraft. He breathes the air, utilizing some of the oxygen and exhaling it again partly in the form of carbon dioxide.

The inexorable laws of nature demand a balance, and we find the plant or vegetable kingdom taking this carbon dioxide gas from the air and after extracting the carbon, releasing the oxygen back to the air again.

Now let us imagine all living things doing the same thing in this animal kingdom of which man himself is king. Even after life growth ceases, the reactions continue until the complete decomposition has been effected and nature has returned this once-living material back to dust.

Even in the vegetable kingdom we find the fruits of all the labor of plant life, the apple, the pear, the banana, potatoes, etc., passing through the same cycle, To complete the cycle oxygen must be present in sufficient quantities, and carbon dioxide liberated in proportion to the chemical reaction that takes place.

Nature tends to set up a balance which we would term a **status quo** in all matters. As life growth continues—and even afterwards while the decomposition is taking place—the oxidation process continues and carbon dioxide gas is liberated.

DECOMPOSITION DIFFICULT

Suppose we confine the product undergoing this change in a closed container, and as the carbon dioxide gas becomes more and more concentrated, while the oxygen content in the surrounding atmosphere becomes less concentrated, we find the decomposing action becoming increasingly difficult. Nature is building up her force of balance to arrive at some **status quo.**

If we maintain such an atmosphere, deficient in oxygen and replaced by the carbon dioxide that nature herself would have provided, we can presumably sufle life growth in both plant (molds) and animal (bacteria). Oxidation processes will also be checked according to the deficiency of the ambient oxygen. We should thus have an additional means of retarding spoilage in the products undergoing refrigeration.

Does it work?

According to the report of the Department of Scientific and Industrial Research Food Investigation's special report No. 43, a study of chemical inhibitors of the growth of molds and bacteria had been started. This report states:

". . . Unfortunately, most chemical substances possessing inhibitory action suffer from either or both of two defects, viz., they are known, or suspected, to be harmful to man; or they impair the color, flavor or taste of the meat. A few substances which might possibly be used in small refrigerator practice, and in which these defects are not too marked, are dealt with below.

USING CARBON DIOXIDE

"Gaseous carbon dioxide recently has come into prominence as a preservative for eggs and meat. So far as the ordinary small refrigerator is concerned, the difficulty lies in its application. In order to obtain any good effect it is necessary to maintain a concentration of the gas for long periods in the store.

"A single period of 'soaking' in the gas is quite ineffective, for the growth of the organisms is only retarded while a sufficient concentration of carbon dioxide is actually maintained in the atmosphere. There is no evidence that they are killed or permanently injured.

"The usefulness of carbon dioxide therefore is limited to periods when the box is likely to be shut for a considerable time. It might in some cases be worth while to admit the gas on closing down for the weekend or even overnight.

"Best results are obtained with an atmosphere containing from 10 to 20% carbon dioxide. At 0° C. the growth of molds is almost completely inhibited, and the rate of growth of the commonly occurring bacteria is reduced to less than one-half by atmospheres containing 20% carbon dioxide.

"If concentrations higher than 20% are used, the meat ultimately suffers discoloration. The lean surfaces become brown and the fatty surfaces pallid. This is due in each case to the conversion of the red pigment of the tissue and blood, oxyhaemoglobin, into the brown methaemoglobin, a change which occurs more readily when the proportion of oxygen in the atmosphere is diminished.

"By enriching the air with carbon dioxide the proportion of oxygen necessarily falls, but when the gas admitted is limited to 20%, the drop in the partial pressure of oxygen is unimportant . . ."

BACTERIA NOT KILLED

Investigations have shown that carbon dioxide does not kill molds or bacteria, but does inhibit their growth provided a considerable portion of the natural oxygen in the air has been replaced with carbon dioxide gas.

It is stated in the "Refrigeration Data Book" of the American Society of Refrigeration Engineers for 1937:

"When one half of the oxygen (10%) has been replaced by CO_2 fresh beef has remained in a salable condition for much longer periods. The storage period was increased still longer when the CO_2 concentration was increased to 20%.

"Pork and bacon were carried for two months at 32° F. in a pure CO_2 atmosphere, and for eight months at 26° F. under similar conditions.

"A considerable portion of the meat now transported to England from Australia and New Zealand is carried in gas-tight holds containing about 20% CO_2."

In the March, 1937, issue of "Refrigeration and Air Conditioning" (Canada), a summary of the 1936 report of the Department of Scientific and Industrial Research is given. Referring to the use of carbon dioxide in refrigeration it states:

". . . At the low-temperature station, Cambridge, methods of storing eggs in different concentrations of carbon dioxide are being tried out on a large scale. A high concentration of, say 60%, prevents attack by mold and gives an excellent yoke but a very fluid white.

"Experiments have been made on the 'gas storage' of pears. British Conference pears have been stored in refrigerated chambers with the atmosphere adjusted to contain the

(*Concluded on Page 26, Column 3*)

A-P Thermostatic Expansion Valves are easily and quickly disassembled for inspection and cleaning.
AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

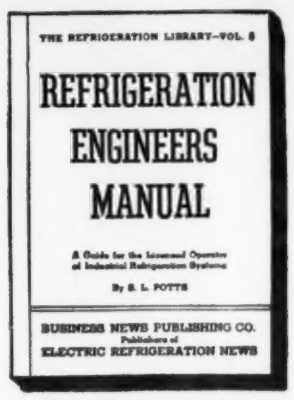
— BUYER'S GUIDE —
SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE INDUSTRY

A MANUAL FOR OPERATORS OF REFRIGERATION PLANTS

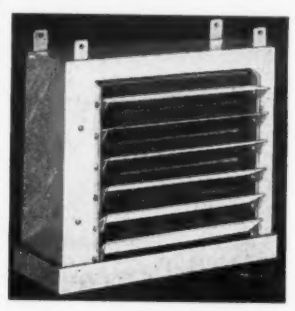
Refrigeration Engineer's Manual is for operators of industrial refrigeration systems. The 224-page book covers the technical as well as the practical side of plant operation.

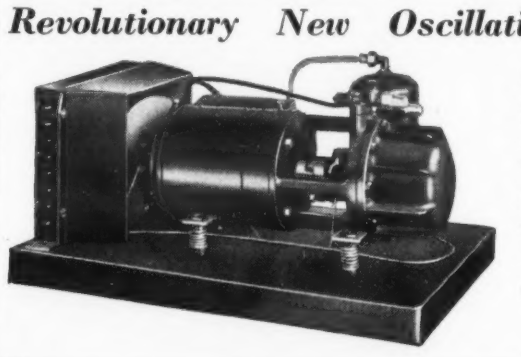
It begins with the principles and methods of refrigeration, discusses refrigerants, deals in detail with the component parts of a refrigeration system, considers the operation of compression and absorption systems, discusses indirect expansion systems, gives data on the manufacture of artificial ice, and discusses in detail cooling towers and spray ponds.

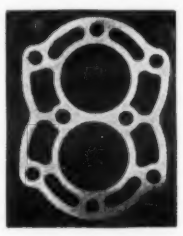
There are 29 tables in the book which supply a ready reference source for the plant operator. The book contains more than 110 illustrations of parts, hook-ups, and uses.

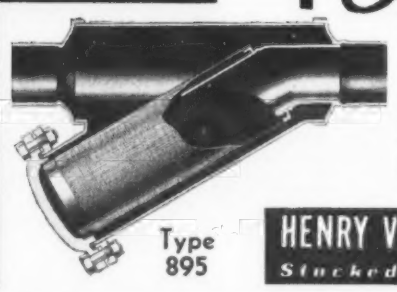


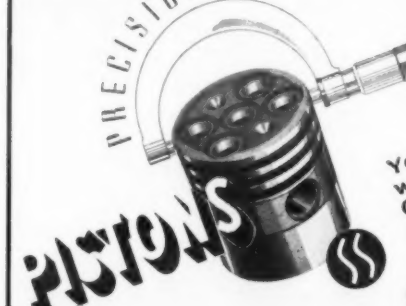
Price $3.00 per Copy . . . Send order and remittance to
BUSINESS NEWS PUBLISHING Co., 5229 Cass Ave., Detroit, Mich.


UNIT BLOWERS
Pipe Coils
Air-Conditioning Coils
FIN COILS
5/8" — 3/4" — 1"
Steel or Copper
REMPE COMPANY
340 N. Sacramento Blvd. Chicago, Illinois
REMPE

Revolutionary New Oscillating Compressor!

A life-saver for manufacturers not making their own units! Here's the opportunity for Service Companies to save their customers money and give them a new up-to-minute unit at a lower cost than repairing the old one!
Write for Prices and Details!
O'Keefe & Merritt Co.
3700 E. Olympic Blvd.
Los Angeles, Calif.


PIONEERS and SPECIALISTS in
GASKETS for ELECTRIC » » REFRIGERATION
offer you Metallic Gaskets that hold regardless of what your refrigerant may be and will not shed particles of material to clog up important working parts in a machine. A metal that will not "creep." Once tight it will stay "tight."
"Send for NEW complete catalog"
CHICAGO-WILCOX MFG. CO.
7701 S. AVALON AVE. • • CHICAGO, ILL.

HENRY
"Y" Strainer
FOR COPPER PIPE

Type 895
Exceptional design. Made of brass. Negligible pressure drop. Easily removable screen. Very large screen area. Light weight. Trapping of oil can be entirely prevented by installing strainer on its side or in a vertical position. Write for Catalog 62: Dryers, Strainers, Valves and Service Tools.
HENRY VALVE CO. 1001 S. N. SPAULDING AVE. CHICAGO, ILL.
Stocked By Leading Jobbers


PRECISION PISTONS
GET WISE MISTER MANUFACTURER!
You can CUT your assembly Costs with the UNIFORMITY of SPENCER SMITH pistons.
Ask for quotations by sending blue prints or samples.
SPENCER-SMITH MACHINE COMPANY
HOWELL, MICH.

Cash in on some extra water cooler profits this season!
Sell Cordley Electric Coolers
WATER coolers will be sold in increasing volume this spring and summer. Business men are buying new equipment, modernizing plants and offices. Cash in on this profitable business with Cordley Electric Water Coolers . . . made by an organization that has specialized in water coolers since 1889 . . . small, compact, inexpensive, good looking units . . . a complete line . . . an easy way to get added sales and extra profits. Write for details.
CORDLEY & HAYES
141 Hudson Street • New York City

BUYER'S GUIDE

SUPPLIERS WHO SPECIALIZE IN SERVICE TO THE REFRIGERATION AND AIR CONDITIONING INDUSTRIES

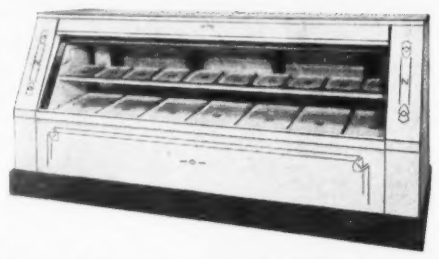
TYLER'S WELDED STEEL *Cases*

● 1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

TYLER Sales-Fixture COMPANY
Dept. E, NILES, MICHIGAN

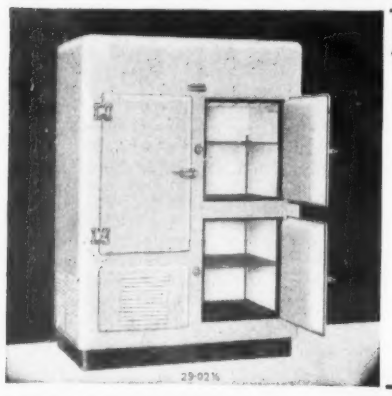
SIX BIG NEW FEATURES

NATIONAL DOUBLE DUTY CASES



Require less service due to extra heavy construction and cork insulation, roomier than other cases, porcelain inside and outside, storage compartment doors 6" thick, chromium hardware. Purchase one for testing purposes, then compare results with other makes. You will purchase more National Cases. Sold with or without coils or platters, prices very attractive. Dealers wanted, few territories open.

NATIONAL REFRIGERATOR CO., Philadelphia, Pa.



STREAMLINED Beauty

THIS LINE SELLS ON SIGHT

Weber brings the result of 35 years of successful manufacturing experience . America's most beautiful line of Refrigerator Cases and Commercial Cabinets. Exclusive territories now open — Complete financing plan

Established 1902 *Cable Address "Weberco."*

WEBER SHOWCASE & FIXTURE CO., INC.
5700 Avalon Boulevard Los Angeles

4-STAR CASE & COOLER FRANCHISE

SHERER

Consider the outstanding features that the Sherer Franchise offers you.

★ A COMPLETE LINE of CASES and COOLERS, engineered to a high peak of perfection.

★ NEW EQUIPMENT constantly under test and development. New developments open new fields for compressor sales.

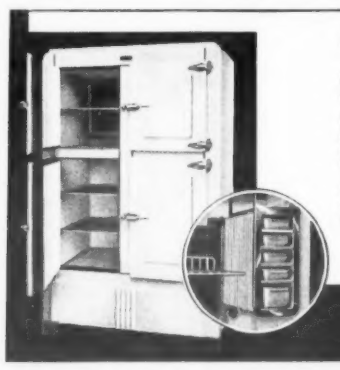
★ LAYOUT DEPARTMENT—layouts for food store modernization programs without cost or obligation.

★ ADVERTISING—Sherer Cases and Coolers regularly advertised by direct mail and in leading food trade publications.

Addition of the Sherer Case and Cooler Franchise to your present line is **your** move for '37. Desirable territories still available. Write for catalog and franchise details. **Be sure to tell us which territory interests you.**

SHERER
DISPLAY AND STORAGE EQUIPMENT FOR RETAIL FOOD STORES
SHERER-GILLETT CO.
MARSHALL, MICHIGAN

Exclusive Case and Cooler Mfgrs . . . Serving Food Retailers Since 1852



A New "Self-Contained" Refrigerator!

Offering 30 cubic feet of storage space, through the use of modern space saving construction and extra height shelves.

Space is provided for Condensing Unit, and the installation of an Ice Cube Maker, which, when combined with the standard back wall coil, eliminates all danger of a drop in temperature or humidity, no matter how heavily frosted the ice maker becomes.

Model No. 30 "Self-Contained" Refrigerator available with solid or glass display doors in top section, choice of gleaming white porcelain, or DuLux finish.

A Similar 6-door Refrigerator—Model No. 45—with 45 cu. ft. of storage space is also available. Write for Bulletin SC-3045

GLOEKLER MANUFACTURING COMPANY
ERIE PENNSYLVANIA
SALES OFFICE 429 FOURTH AVENUE PITTSBURGH

TYLER'S WELDED STEEL REACH-IN BOX

SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" coiling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN

ICE CREAM CABINETS

The Most Complete Line of Ice Cream Cabinets in the Industry

BUY YOUR CABINETS DIRECT FROM THE MANUFACTURER

With or without compressors. Will operate using either Freon, Methyl Chloride or Sulphur Dioxide

WRITE OR WIRE FOR YOUR CATALOG TODAY

Schaefer MINNEAPOLIS MINNESOTA Est. 1929

Use of Carbon Dioxide In Fruit Storage

(*Concluded from Page 25, Column 3*)

correct amount of carbon dioxide for long periods, extending well into the summer. When removed from the store the flavor, texture and appearance of the pears were entirely satisfactory.

"Results are given also of experiments on the gas storage of Williams' Bon Chretian pears. Normally this variety is very difficult to market because it ripens quickly at ordinary temperatures and remains in an eating-ripe condition for only a few hours.

"By gas storage, in an atmosphere containing 2.5% oxygen and 5% carbon dioxide at 34° F., the fruit was held in a marketable condition until the middle of March. On removal from the store at this date, the report states, the pears ripened to a good quality in just over a week and remained in an eating-ripe condition for two or three days. The correct conditions for gas storage have been maintained on a commercial scale in a 30-ton experimental gas store."

It has been well known for many years among refrigeration engineers that products in storage give off carbon dioxide gas during the storage period. Certain regulations and formulae were set up to eliminate this and freshen the air within the storage space by means of air changes, either natural or forced, as might be necessary to obtain the desired results.

For the past few years experiments have been carried on in this country to utilize this carbon dioxide, or even to add additional carbon dioxide gas to prolong storage.

SUCCESS WITH FRUIT

Members of the California Fruit Growers Exchange have been meeting with considerable success in this process. They have devised a simple method of testing the amount of this gas present in the storage atmosphere and have been able to regulate the percentage in the air with very favorable results.

A large storage warehouse in Chicago has been able to prolong the storage period of eggs from a three months, period of three times that amount. Although the eggs emitted a certain amount of carbon dioxide gas, an additional amount was added to the storage atmosphere until the concentration was sufficiently strong to retard the further ripening of the product.

Considerable loss of carbon dioxide gas was experienced at first from filtration and diffusion. This was remedied by better sealing of all openings. Diffusion was reduced by painting the interior of the storage walls with a special aluminum base paint.

In large apple storages it has been customary to leave large openings near the top of the storage space for ventilation, and to allow the heat of respiration to pass off, carrying the carbon dioxide gas generated by the respiration of the apples. The same effect is more or less prevalent in other kinds of fruit during the storage and ripening process.

In a few apple storages equipped to refrigerate 10,000 to 15,000 bushels these ventilator openings have been greatly reduced or eliminated entirely.

The only precaution necessary is to prevent the air in the storage from becoming saturated enough with carbon dioxide, or to reduce the oxygen percentage enough to be harmful to those who must work there during the storage of the fruit.

As the percentage of carbon dioxide in the storage air builds up, either naturally or artificially, the respiration action of the fruit becomes stifled and is slowed down.

As the fruit is brought to a low temperature (just above the freezing point) this acts also to prevent bacterial and mold reactions and thus we have all three of the actions which tend to spoil the product under strict control.

It is believed that as experimental work becomes a practical reality we will find more and more of a tendency to control the respiration process of the products in storage by means of increasing the carbon dioxide content or percentage in the storage atmosphere.

Especially in smaller types of storage refrigerators as found in retail stores it should be possible to control the carbon dioxide content or percentage of the storage atmosphere and thus prolong the natural destructive processes ever present.

Book Review

Successful Direct Mail Methods Analyzed In New Volume

"Successful Direct-Mail Methods." Author: John K. Crippen, manager of the direct mail department, L. B. Allen Co., Inc. Publisher: McGraw-Hill Book Co., Inc. Pages: 336. Price: $3.50 Reviewed by Wilson Lewis Taylor.

INTENDED to be a comprehensive guide of the methods of direct-mail advertising and merchandising, this book fully details the procedures, materials, and other factors involved in using mail to build up business.

To fortify the principles it advances, scores of illustrative examples — most of which have proven successful and productive in actual practice— are scattered through the text. Examples include introductory, follow-up, campaign-series, and reply form letters together with enclosures, broadsides, and penny postcards.

The author analyzes his specimens for the qualities that have made them successful and gives his opinion of the best particular uses for each type.

Unwilling to leave the reader with simply the understanding of how to produce what he considers the best in direct-mail materials, the author devotes the last third of his book to the details of conducting the campaign.

He points out the difficulties of making a large, up-to-date, and productive mailing list, and shows how they may be overcome. He describes the technique of pre-campaign test mailing. He discusses the actual preparation of mailings—considering the use of address files and addressing and mailing machines and the problem of conforming to postal regulations.

Frequent summaries of the major points discussed in his text are included in this section.

Listing 49 applications of direct-mail methods to business, the list being one compiled by the Direct Mail Advertising Association of America, the book proceeds with the technique of writing the form letter.

THE THREE "F'S"

To be successful, the form letter, according to Mr. Crippen, must be composed with the "Three F's" always in mind, omission of any one of them being fatal to the letter's purpose. These "F's" are:

1. Friendly style.
2. Forceful presentation.
3. Favorable proposition or proposal.

Friendliness, accompanied by sincerity, is more appealing than "chesty" formality, the author points out.

"The psychology of its appeal is that a man prefers to believe a friend."

Friendliness, though presumption and over-enthusiasm are to be avoided, must be maintained throughout the form letter. The personal salesman, of course, must begin and end each meeting with his prospect on a friendly note, but the form letter must do more. The letter, not being reenforced by the physically-present personality of the salesman, must make an effort to appear friendly even during the body of the sales presentation. And the use of "we" and "our" to help preserve the friendly tone of a letter is both defensible and advisible.

The value of form-letter friendliness is especially apparent in mail-order selling, for the prospect, unable to see or handle the merchandise before ordering, must have faith in the good will of the seller.

Forceful presentation, says Mr. Crippen, applies particularly to the body of the letter, where the prospect is presented with the selling facts.

No definite sales points should appear in the introduction. The purpose of the introduction is solely to catch the reader's interest; to try to accomplish more is to risk the wastebasket. The purpose is to start the sales story and build it up logically and interestingly to the climax which immediately precedes the offer of the favorable proposal or proposition.

The various types of introductions and their special uses are discussed with emphasis on the question and free-gift types.

Particularly adapted to the statement of the favorable proposition or proposal is the conclusion and, in some cases, the postcript of the form letter.

Restricting "proposition" to the letter intended to elicit a definite order, and "proposal" to the general sales letter, the purpose of which is to advertise or create an impression in the mind of the prospect, the author says that both proposition and proposal must seem fair and to the advantage of the prospect.

For friendliness alone is not sufficient to persuade the prospect that he is protected. Some concrete assurance is needed, for "every direct-mail prospect does possess a bit of pardonable doubt securely tucked away in the back of his mind."

The money-back guarantee is one method of making the proposition seem fair. A guarantee period, testimonials, and avoidance of exaggerations are others.

Several methods (the free-gift is one) can be used to make proposals attractive.

CAMPAIGN OUTLINE ADVISED

In regard to follow-up letters and campaign-series letters, Mr. Crippen declares that a single objective must be adhered to if success is expected. In general, a preconceived plan, with the steps worked out in orderly fashion before the campaign is begun, is most productive. Many direct-mail experts make out complete outline forms well in advance with the objective and procedure of the campaign clearly determined. Samples of these forms are shown in the book.

In his consideration of mailing lists and the care that must be exercised in their making, the author includes a bibliography of the directories to be found covering 85 fields of business. He then devotes 29 pages to the techniques of test mailing, a form of survey that can save much waste in money and effort.

"Preparation of Mailings," the final chapter in the book, deals in great detail with the problem of actually getting direct-mail materials in the mail with the least possible expense and in keeping with postal regulations. The chapter was written with the cooperation of C. B. Eilenberger, Third Assistant Postmaster General, division of classification, Washington, D. C.

By the writing of this book, the author does not want to go on record as belittling other sales methods in in favor of direct mail.

He specifically denies any such intention, saying that direct mail today is an able companion of radio, newspaper, magazine, and other sorts of advertising. Examples of several types of "partnership" are included in his book.

Zarotschenzeff to Sail On World Trip

NEW YORK CITY—M. T. Zarotschenzeff, vice president and technical director of the Z Pack Corp., will leave in May on a six months' trip around the world, to study current progress in the food and refrigeration industries.

Starting from New York, Mr. Zarotschenzeff will visit the Pacific Coast, including San Francisco, Seattle, Vancouver, and other points where large quantities of salmon and cold-pack berries are prepared. Here he will study new developments in the freezing of vegetables, and will also visit the U. S. Frozen Pack Laboratory.

Next stop will be Japan, where Mr. Zarotschenzeff will survey progress in the preservation by refrigeration of fish fillets, green peas, mushrooms, frog legs, etc., now being exported in large quantities from that country.

Cities to be visited include Tokyo, Kobe, and Yokohama. In China, Shanghai and Hongkong will be visited for studies of the methods used in production of frozen Chinese eggs. The pineapple industry will be covered in a trip to Manila.

Enroute to India, Mr. Zarotschenzeff will visit Singapore and Penang, previous to studying methods of production, transportation, and distribution of various frozen foods under tropical conditions.

Last part of the journey will be made through the Suez Canal, with stops in Jaffa, a rapidly developing source of citrus fruits shipped in increasing quantities to European countries.

In Europe, Mr. Zarotschenzeff will visit the research laboratories for fruits and vegetables in Italy, the Karlsruhe Institute in Germany, headed by Prof. R. Plank, the Fisheries Station at Wesermuende, the Low Temperature Research Station in Cambridge, England, and the Torry Research Station at Aberdeen, Scotland.

- PATENTS -

Issued March 30, 1937

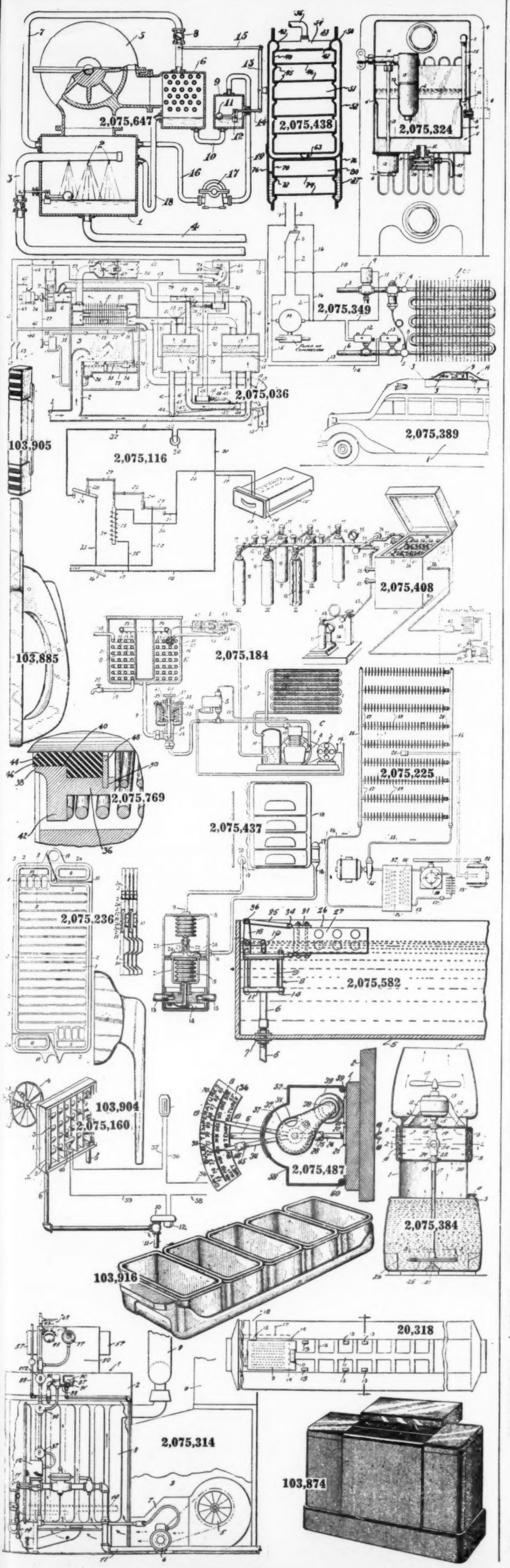
2,075,036. AIR CONDITIONING APPARATUS AND PROCESS. Henry L. Hollis, Chicago, Ill. Application Aug. 26, 1935. Serial No. 37,839. 18 Claims. (Cl. 183—4)

2,075,116. MEANS FOR DEFROSTING REFRIGERATORS. Julius A. Hussar, East Cleveland, Ohio. Application Oct. 14, 1935. Serial No. 44,885. 4 Claims. (Cl. 62—3)

2,075,160. MODULATED RADIATOR CONTROL. John S. Baker, Chicago, Ill., assignor to Cook Electric Co., Chicago, Ill. Application Sept. 16, 1932. Serial No. 633,421. 12 Claims. (Cl. 236—37)

2,075,184. LIQUID COOLER. Dewey H. Dolison, Mount Vernon, Ohio, assignor to The Brunswick-Balke-Collender Co., Chicago, Ill. Application April 30, 1934. Serial No. 723,121. 13 Claims. (Cl. 62—141)

2,075,225. HUMIDITY CONTROL FOR REFRIGERATING MECHANISM. Edwin M. Post, Jr., New York, N. Y., assignor to International Motor Co., New York, N. Y. Application July 18, 1933. Serial No. 680,934. 4 Claims. (Cl. 62—6)



2,075,236. HEAT EXCHANGE APPARATUS AND ELEMENT OR PLATE THEREFOR. Richard Seligman, Wimbledon, William Edward Crosby, Kingston, and Hugh Frederick Goodman, Barnes, London, England, assignors to The Aluminum Plant and Vessel Co., Ltd., Wandsworth, London County, England. Application Dec. 15, 1934. Serial No. 757,690. In Great Britain Dec. 20, 1933. 10 Claims. (Cl. 257—245)

2,075,314. AIR CONDITIONING APPARATUS. Max M. Suppes, Elyria, Ohio, assignor to Fox Furnace Co., Elyria, Ohio. Application April 26, 1933. Serial No. 667,981. 7 Claims. (Cl. 236—44)

2,075,324. HUMIDIFIER. William J. Wooley, Chicago, Ill. Application June 23, 1934. Serial No. 732,026. 8 Claims. (Cl. 237—78)

2,075,349. REFRIGERATION. Harvey B. Lawton, Bloomington, Ill., assignor to Williams Oil-O-Matic Heating Corp., Bloomington, Ill. Application Aug. 26, 1935. Serial No. 37,911. 5 Claims. (Cl. 62—4)

2,075,384. PORTABLE AIR CONDITIONER FOR ROOMS. Carl G. Vretman, Atlanta, Ga., assignor of one-tenth to Robert H. Fulton, Atlanta, Ga., and one-tenth to W. Kenneth Watkins, New York, N. Y. Application June 4, 1936. Serial No. 83,580. 7 Claims. (Cl. 183—17)

2,075,389. AIR CONDITIONING DEVICE. William S. Eubank, Philadelphia, Pa. Application Oct. 28, 1935. Serial No. 47,036. 3 Claims. (Cl. 62—117)

2,075,408. TRANSFER OF LIQUEFIED GAS. Justin Grant Sholes, Cleveland, Ohio, assignor to The Ohio Chemical and Manufacturing Co., Cleveland, Ohio. Application Sept. 17, 1935. Serial No. 40,887. 12 Claims. (Cl. 226—20)

2,075,437. DEFROSTING CONTROL FOR AUTOMATIC REFRIGERATORS. William R. Hainsworth, Larchmont, N. Y., assignor, by mesne assignments, to Servel, Inc. Application Sept. 5, 1931. Serial No. 561,355. 16 Claims. (Cl. 62—5)

2,075,438. REFRIGERATING APPARATUS. Edward Heitman, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich. Application Oct. 10, 1932. Serial No. 636,993. 2 Claims. (Cl. 62—126)

2,075,487. EFFECTIVE TEMPERATURE THERMOSTAT. John H. Van Zandt, Dallas, Tex., assignor to C. A. Dunham Co., Marshalltown, Iowa. Application March 9, 1935. Serial No. 10,206. 7 Claims. (Cl. 297—2)

2,075,582. FLOAT VALVE. William M. Jolly, Van Horn, Tex. Application July 10, 1936. Serial No. 89,992. 2 Claims. (Cl. 137—104)

2,075,647. CONTROLLING APPARATUS FOR REFRIGERATING SYSTEMS. Frederick H. Hibberd, Larchmont, N. Y., assignor to Ingersoll-Rand Co., Jersey City, N. J. Application Nov. 28, 1934. Serial No. 755,140. 13 Claims. (Cl. 62—115)

2,075,769. SEAL FOR REFRIGERATING APPARATUS. Alex A. McCormack, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Application Oct. 24, 1934. Serial No. 749,784. 3 Claims. (Cl. 286—7)

REISSUES

20,318—SYSTEM FOR AIR CONDITIONING RAILROAD CARS. Herman Richard Arf, Louisville, Ky., assignor, by mesne assignments, to Carrier Corp., Newark, N. J. Original No. 2,005,769, dated June 25, 1935. Serial No. 410,360, Nov. 29, 1929. Reissue No. 20,178, dated Nov. 24, 1936. Serial No. 83,820, June 5, 1936. This application for reissue Jan. 26, 1937, Serial No. 122,414. 11 Claims. (Cl. 98—14)

DESIGNS

103,874. DESIGN FOR AN AIR CONDITIONING CABINET. Robert D. Lambert, New York, and Matson C. Terry, New Rochelle, N. Y., assignors to American Radiator Co., New York, N. Y. Application Feb. 26, 1937. Serial No. 67,879. Term of patent 14 years.

103,885. DESIGN FOR A REFRIGERATOR HANDLE. Howard B. Barber, Chicago, Ill., assignor to Montgomery Ward & Co., Inc., Chicago, Ill. Application Feb. 1, 1937. Serial No. 67,380. Term of patent 7 years.

103,904. DESIGN FOR A DOOR HANDLE FOR REFRIGERATOR CABINETS OR THE LIKE. Kenneth C. Welch, Grand Rapids, Mich., assignor to Gibson Electric Refrigerator Corp., Greenville, Mich. Application Feb. 12, 1937. Serial No. 67,617. Term of patent 14 years.

103,905. DESIGN FOR A DOOR HINGE FOR REFRIGERATOR CABINETS OR THE LIKE. Kenneth C. Welch, Grand Rapids, Mich., assignor to Gibson Electric Refrigeration Corp., Greenville, Mich. Application Feb. 12, 1937. Serial No. 67,618. Term of patent 14 years.

103,916. DESIGN FOR A MULTIPLE COMPARTMENT REFRIGERATOR TRAY UNIT. Lewis H. Scurlock, Chicago, Ill. Application Oct. 1, 1936. Serial No. 65,097. Term of patent 14 years.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Graybar Opens Branch Store In Allentown, Pa.

ALLENTOWN, Pa.—Graybar Electric Co., Hotpoint distributor, has opened a branch store and wholesale warehouse at 110 Hamilton St.

BUYER'S GUIDE

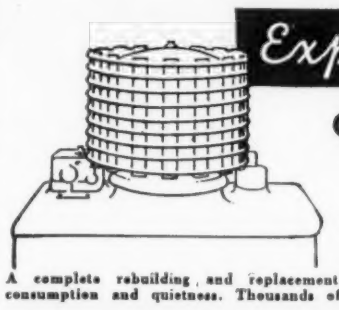
SPECIAL RATES APPLY TO THESE COLUMNS ONLY
WRITE ADVERTISING DEPT. FOR FULL INFORMATION

5700 Items for You!

- WRITE FOR 164 Page Catalog of BARGAINS
- 16 COMPLETE STOCKS—One as close as Your Telephone
- ONE STOP SERVICE—Refrigeration—Electric—Hardware—Motors
- 18 ENGINEERS at YOUR SERVICE—Let us engineer your jobs
- ½ H.P. Refrigerator Motor. A real bargain at $7.95 net
- WE PAY NO RETAIL TAX Because we sell Dealers only
- SPECIAL OFFER—$1.00 Tester and $2.50 Flaring Tool both for $1.99

Atlanta—Boston—Chicago—Cincinnati—Cleveland—Dallas—Detroit
Kansas City, Mo.—Los Angeles—Minneapolis—New York
Philadelphia—Richmond—San Francisco—Seattle—St. Louis

W.W. GRAINGER INC. GRAINGER BLDG. 825 CONGRESS ST. CHICAGO



Expert REBUILDING & REPAIR

General Electric MONITOR TOP UNITS **$25**
All Household Models
MAJESTIC HERMETIC UNITS—$20.50
SERVEL HERMETIC UNITS—$18.50
F.O.B. OUR FACTORY
One Year Unconditional Guarantee

A complete rebuilding and replacement service. All units tested for temperature, cycling, wattage consumption and quietness. Thousands of units rebuilt in past seven years. We guarantee satisfaction.

REFRIGERATION MAINTENANCE CORP.
365 EAST ILLINOIS ST. — CHICAGO, ILLINOIS

Type X

DELIVER YOUR REFRIGERATORS ON RUBBER

***The* DAYTON CARRIER TRUCK**

Will not mar — Speeds delivery

Type X - 53" long — Type Y - 70" long, both with 8 inch rubber tired wheels. Fitted with movable foot or with permanent wide foot for skirted bottom cabinets.

Type X with one strap and either foot - **$21.00**
Type Y with one strap and either foot - **$22.50**
f. o. b. Dayton

Write for Bulletin

INTERNATIONAL ENGINEERING INC.
Dayton, Ohio 407 S. Dearborn St., Chicago, Ill 15 Park Row, N. Y.

PARTS-SUPPLIES-TOOLS *for REFRIGERATION-AIR CONDITIONING*

Complete Stock—Quick Service

One-day service on your order for any parts, supplies or tools you may need for any type of refrigerator or air conditioner. QUALITY MERCHANDISE, absolutely guaranteed and offered at the lowest prices. Deal with us—obtain all your needs from one source—and rely absolutely on getting exactly what you order. WHOLESALE ONLY for your protection. Request big, complete, new catalog on your business card or letterhead. It's FREE.

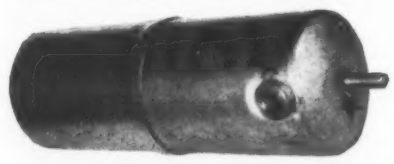
SEND FOR BIG FREE CATALOG

AIRO SUPPLY CO. 2732 N. Ashland Ave., CHICAGO 17 West 60th Street, NEW YORK

ALL YOUR NEEDS FROM ONE SOURCE

BRAZED IN CONTROLLED ATMOSPHERE

This receiver tank is made with special stampings brazed★ in a controlled atmosphere electric furnace. This process is the newest of our facilities for producing Pressed Metal Products. We furnish stampings, assemblies, hydrogen brazing and enameling. Stamped compressor bases are one of the many items we supply. Check us for prices.



Acklin

THE ACKLIN STAMPING CO.
Toledo, Ohio Chicago, Illinois
Detroit, 2-165 General Motors Bldg.

TYPE WRM

Electrimatic

WATER REGULATORS

Write for our catalog describing refrigeration and air conditioning controls available in sizes and types to suit your requirements.

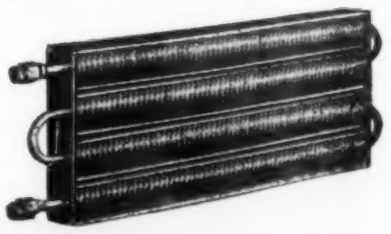
THE ELECTRIMATIC CORPORATION
2100 INDIANA AVE., CHICAGO, ILL.

FINNED EVAPORATOR AND CONDENSER COILS

FINNED COILS FOR ALL PURPOSES

STEEL — COPPER — ALUMINUM AND SPECIAL METALS

Positive thermal bond between metals of proper thickness to assure maximum heat transfer.



JACKSON **ACME INDUSTRIES Inc.** MICHIGAN